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LEADING CHANGE IN INFORMATION MANAGEMENT

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**A Context Statement submitted in partial fulfilment of the requirements
for the award of Doctorate in Professional Studies by Public Works**

Institute for Work Based Learning



United Kingdom

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Dedicated to my late mom who taught me the value of education and to my late dad who exemplified the importance of dedication and hard work.

Abstract

Introducing and leading change in any field is a difficult and complex task with no mapped path or certain route that guarantees success. Working in a public and administrative institution rarely offers opportunities for introducing and leading creative and innovative changes. However, my work on various information management tasks gave me a chance to lead change in a number of international organizations for which I worked, discovering new or improved information solutions, products and services. In retrospect, leading change in information management was a *sine qua non* of my long career and is a major focus of this Context Statement.

This Context Statement offers a review of my own public works and achievements during my long professional career in information management. It concentrates on four public works, describing them in chronological order. It defines main influencers, theories, concepts and people that made the greatest impact on my career; evaluates the work performed, the technology used, the results achieved, and the lessons learned. The Context Statement also offers a thematic review of my public works, putting them in the perspective of the dramatically changed world of information management, the global impact of information, the democratisation of scientific and technical information, and the information ethics.

The Context Statement concludes that, if we - the information managers - do not lead change and instigate constant innovation and modernization of our field, we will become museum custodians, instead of a leading avant-garde in today's knowledge economy and the information world in which we live.

Acknowledgements

Undertaking doctorate studies by public works is a very exciting challenge, not to be taken lightly. In a way, it is an innovative process requiring creativity. Having a good idea is both critical and essential, but it is only the start of a long road of self-assessment. I was lucky to have great support, from the very beginning to the end of this process, and I am extremely grateful to all those who helped me along the way.

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Leading Change in Information Management

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1. Introduction

Studying at the Middlesex University Institute for Work Based Learning offered me a chance to reflect upon, and critically evaluate, my 35 years working in the very dynamic area of information and knowledge management. Most of those years were spent as an international civil servant within the United Nations System. Although part of a large administrative organization, often regarded as very bureaucratic, the deliverables of my work were always very practical and, in the end, represented a specific value-added service or product for the customers or users. My work on information management tasks gave me a chance to introduce and lead change by devising new solutions, products and services. This was the case with the establishment of a documentation centre in Sierra Leone, the first website created for the International Civil Aviation Organization (ICAO), and for the huge document collection and database to be opened worldwide to nuclear energy students, researchers and developers.

Due to its often repetitive nature and report based outcomes, work in any bureaucratic institution is rarely regarded as creative and innovative, or prone to change. However, working in such an organization in the area of information management gave me an opportunity to show creativity and come up with some innovative solutions that instigated change. The following pages will hopefully show that we can introduce positive change in almost any environment, and that the information arena offers numerous opportunities to practice this. I believe that my creative introduction of changes to the UNESCO development project in Sierra Leone by using best practices in project management, my work on the introduction of the Web at ICAO, bridging geographical and financial gaps between users and available information, and by the further democratisation of nuclear information through open access, warrant the award of DProf in Public Works.

Before elaborating on my specific public works and my contribution to and involvement in each one of them, I will review two professional contexts that have emerged as crucial. These themes are '*change management*', which also includes the role and importance managers and leaders play; and '*information management*' which is often included or even replaced by the newer concept of 'knowledge management'. The review of these two concepts is aimed at clarifying their use in this Context Statement, rather than offering a comprehensive analysis and theoretical discussion regarding all aspects and full granularity of their meanings and use in practice and theory. However, my analysis is embedded in some of the major works in the literature of these fields.

These two fields represent the professional and intellectual contexts in which I have operated. As it will be discussed in the Thematic Review Chapter, four main themes have

emerged through my critical engagement with my public works: my constant adaptation to frequent and continuing changes characteristic of information management; my ability to work towards improving access to and the democratisation of information; my sophisticated understanding of the global impact of information; my attention to information ethics. These four themes – introducing change, improving access, understanding globalization of information, and attention to ethics – represent a silver lining in my public works which will be further discussed and elaborated on in the *Thematic Review Chapter*.

Furthermore, paragraph 1.3 elaborates on the selection of public works used in this Context Statement. I have concentrated on and selected four public works which had an impact outside my immediate working context, such as my own department or the organization in which I worked.

1.1 Change management

Contemporary process of continuous globalization and constant innovation of information technology requires frequent change of the way we perceive and do our jobs. Implemented one by one, such changes over time result in a totally different business environment. Management of information is an area that has undergone some dramatic changes. From a completely paper based environment it has evolved into a virtual electronic environment easily accessible by almost anyone, anywhere around the world and at any time.

The only constant in our lives and our work is change. People change, work procedures change, and customer demands and expectations change. What was yesterday a perfect solution, product or service, is today just a historical artefact. According to Burnes (Burnes, 2004) change is an ever-present feature of organisational life, both at an operational and strategic level. If we do not instigate constant innovation and modernization, we will become museum custodians, instead of a leading avant-garde centre in the area of information and documentation (Savic, 2013). For information management this means organizational change, the adoption of new technology, and the introduction of new information solutions.

However, this increasing need for change requires good change management skills and practice. The ability to successfully manage organizational change is essential in any workplace today. Major and rapid organizational change is profoundly difficult because the structure, culture, and routines of organizations often reflect a persistent and difficult-to-remove 'imprint' of past periods, which are resistant to radical change even as the current environment of the organization changes rapidly (Marquis and Tilcsik, 2013).

Due to the growth of technology, modern organizational change is largely motivated by exterior innovations rather than internal moves. When these developments occur, the

organizations that adapt quickest create a competitive advantage for themselves, while the companies and professions that refuse to change get left behind or completely disappear (Skelsey, 2012).

The successful management of change is crucial to any organisation in order to survive and succeed in the present highly competitive and continuously evolving business environment. However, theories and approaches to change management currently available to academics and practitioners are often contradictory, mostly lacking empirical evidence and supported by unchallenged hypotheses concerning the nature of contemporary organisational change management (Todnem, 2015).

Change management has been defined as ‘the process of continually renewing an organization’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers’ (Moran and Brightman, 2001). Another perspective of change management focuses on organizational vision and plans to reach it. Accordingly, change management is the process by which an organization gets to its future state, its vision. While traditional planning processes delineate the steps on the journey, change management attempts to facilitate that journey. Therefore, creating change starts with creating a vision for change and then empowering individuals to act as change agents to attain that vision (Lorenzi and Riley, 2000).

Geoffrey James (2015), contributing editor of Inc.com web-based journal, recently published 10 simple rules for becoming a great leader. They are:

- Optimistic take on life
- Setting a clear direction/vision
- Creating a workable plan
- Provision of secure and sufficient resources
- Listen more than talk
- Conduct meetings with fixed agendas
- No criticisms in public
- Ask others to do only something that you will not hesitate doing yourself
- Delegate
- Give credit to the team

Directly related to this list is a list of things that successful leaders should never tolerated. This includes – dishonesty, boredom, mediocrity, negativity, toxicity, disorganization, unhealthy anything, regrets, distrust, anger and control (Daskal, 20015).

Although not fully aware of their impact and importance in all phases of my professional career and development, my experience supports both, the rules for becoming a great leader and the list of things that should not be tolerated. In retrospective, I believe that setting a clear direction and vision, securing of sufficient resources, team work and

respect are the cornerstones of successful leadership and change management. My life philosophy has always been geared towards optimistic outcomes and a search for solutions, instead of dwelling on problems, regrets, missed chances, difficult situations and impasses. In all my public works I placed emphasis on fighting mediocrity, disorganization and distrust. One of the phrases I often heard from my team members was that working with me was never boring! As anecdotal evidence I can mention that one Secretary General I was working for used to come to my office to find out which new projects I was working on. Open appreciation of changes made was always a great motivating force to go one step further and come up with new and better solutions.

Dean and Linda Anderson (2010) talk about another very important aspect of leading change. It is a move from classical view of change management as an area where most of the attention is devoted to planning for a change and overcoming employee resistance to change, to a complete transformational change. According to Anderson's, transformational change involves a number of very essential and unique dynamics that demand a new leadership perspective, skill, and style. Because leading transformational change is so radically different from managing or leading a stable organization, leaders need to acquire a new set of leadership skills and strategies, and they need to alter their leadership style and behaviour. In other words, change leaders need to change themselves in order to lead transformation successfully in their organizations.

Figure 1 graphically portrays what they call the Conscious Change Leader Accountability Model. According to this model, leaders of transformational change must have excellent skills in all four quadrants: mindset (internal, individual); culture (internal, collective); behaviour (external, individual); and systems (external, collective). Each of these quadrants must be properly addressed. Organizational transformation is not simply about organizational systems or culture. It demands attention to individuals, how people relate, how teams function, and the marketplace itself (Anderson and Anderson, 2010). Roger Gill (2003) argues that, while change must be well managed, it also requires effective leadership to be successfully introduced and sustained.

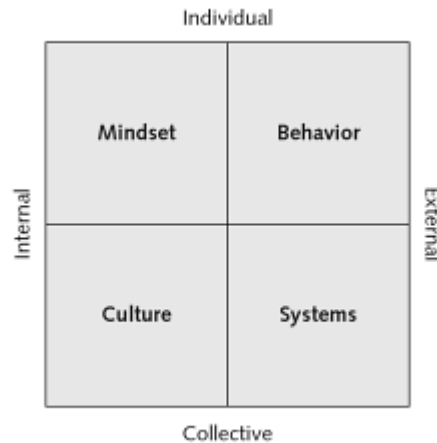


Figure 1: The four quadrants of conscious change leadership

Leading change in information management definitely instigated a number of changes in my personal mind-set and behaviour. Regarding the mind-set changes took place in my values, beliefs, thoughts, emotions, and levels of commitment. Strong belief in the outcomes of my public works increased the level of my commitment and desire to succeed and to bring it to fruition. Behavioural changes followed as well, particularly regarding my work style, skills and actions. Long working hours became a norm and 'hunger' for acquiring new knowledge and skills increased. The value of this intuitive direction that I have taken was confirmed by a number of previous and subsequent studies. For example, according to the American Management Association (1994) the key to successful change is leadership, followed by corporate values, communication, teambuilding, education and training. Sadler (1997) concurs that 'we have observed dramatic transformations in British industry in recent times which appear to be due more to inspirational leadership than to good management as traditionally conceived'. Roger Gill (2003) argued that, while change must be well managed, it also requires effective leadership to be successfully introduced and sustained.

1.2 Information management

Collecting and managing information has always been important in all areas of life – personal, business and commerce, education and government, cultural and social. It is practiced by small businesses and multinational organizations, government institutions, schools, universities, libraries, museums and many other institutions. It is implemented by numerous record managers, archivists, librarians, and information officers.

Initially, information management was regarded as an activity focused on the plans and acts that needed to be performed to control an organization's records (Place and Hyslop,

1982). The differences between information management, records managements, and information resources management were negligible and the terms were interchangeable.

Cronin (1985) claimed that the focus of information management should be on the control of systematically recorded information and less on the use of these records. Some authors regard information management as the management of the information resources which involved the management of information technology (Wilson, 1989).

Choo (1998) proposed a process model of information management presented as a cycle with 5 basic steps that included identification of information needs, information acquisition, information organization and storage, information distribution and information use.

Information, as we know it today, includes electronic information such as data, electronic documents, audio, video, etc., as well as physical information, usually in paper format. Regardless of its format, “information needs to be managed throughout its lifecycle, which includes capture, management, preservation, storage and delivery of the right information to the right people at the right time” (Association for Information and Image Management, n.d.).

Figure 2¹ shows the basis for conclusion that knowledge is based on information, while information is based on data, which, like a holy trinity, makes an inseparable whole. There is always data in information and information in knowledge. At the same time, this figure shows the different functionality levels of data management, information management and knowledge management, by moving from the collection and organization of data at the base, to the summarization and analysis of information, and finally, to synthesizing and decision making at the top of the value chain. It should be kept in mind that the terms “data”, “information” and “knowledge” are often used interchangeably. However, their management requires very different processes.

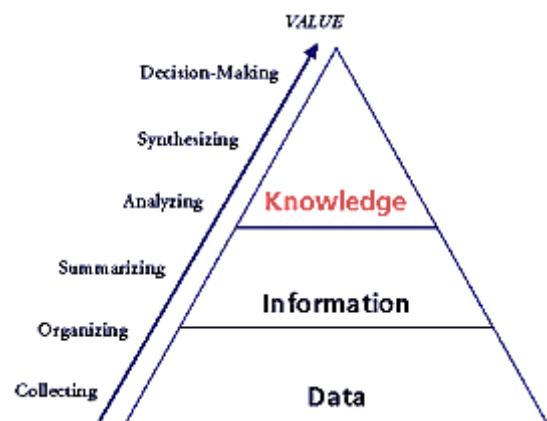


Figure 2: From data to knowledge

The distinction between information management and knowledge management is not well-articulated in literature (Bouthillier and Shearer, 2002). There is not even a consensus regarding the claim that knowledge management is a new field with its own research base, since much of the terminology and techniques used, such as knowledge mapping, seem to have been borrowed from both IM and librarianship (Koenig, 1997). “Knowledge

¹ CC learningforsustainability.net

management is considered by some as the business salvation, and by others as the emperor's new clothes" (Martensson, 2000).

Both information and knowledge are the outcomes of human action involving certain artefacts. Knowledge builds on an accumulation of experience, while information depends on an aggregation of data. The transformation of data into information happens by giving it meaning and significance in a given context, and then transforming that information into knowledge. This last step requires cognitive human effort that generates the perception of structure and offers some deeper meaning and significance. Based on logical thinking, reasoning and reflection, information is turned into knowledge which might become actionable. Managing knowledge is an even larger challenge than managing information because of the complex nature of organizational knowledge. Organizational knowledge can reside in explicit artefacts, such as documents, publications and databases, but also in the tacit knowledge of individuals. The outcome of managing the data-information-knowledge continuum is the enabling and taking of action that leads to results at an organizational level (Choo, 2002).

In the earlier stages of my career, I subscribed to the computer-based information-processing paradigm where "information systems will maintain the corporate history, experience and expertise that long-term employees now hold. The information systems themselves – not the people – can become the stable structure of the organization. People will be free to come and go, but the value of their experience will be incorporated in the systems that help them and their successors run the business" (Applegate, Cash and Mills, 1988). This outlook was the obvious result of my overwhelming enthusiasm towards the power of computers and my interest in artificial intelligence. However, life practice and experience quickly demonstrated this approach was not feasible and that it needed to be substantially revised. A new alternative model of knowledge management based on the synergy of innovation and the creativity of humans, combined with the clever use of advanced capabilities of new information technologies, became my prevailing approach.

Knowledge does not reside in the collection of information. People play a critical role in the process of knowledge creation and its use. "Knowledge, unlike information, is about beliefs and commitment" (Nonaka and Takeuchi, 1995). The new business environment requires organizations to go beyond predicting and reacting to anticipatory responses given by proactive knowledge creators. The information-processing model of knowledge management was suitable for predictable environments of incremental and continuous changes to structured problems. Today's dynamic environments not only require multiple perspectives of solutions to a given problem, but also require different interpretations of the problem taking into consideration different views of the future.

There are many discussions and many ways to try to understand and explain the world of data-information-knowledge-wisdom. The most often cited and used is the DIKW model. I do not fully subscribe to this somewhat outdated model originating from computer/information science, but I do see some use for it. For example, “the linearity of the continuum D-I-K-W”, although often criticized, still gives us a simplified way to understand different levels of complexity, especially useful for operational management purposes, though not so much for knowledge management purposes. It also offers a tool to determine the visibility/tangibility of its different elements. Data and information are visible, while knowledge and wisdom are opaque. Another use is the realization of the difference between subject and object. D&I are object based, while K&W are human based. In other words D&I are part of a physical reality while K&W are part of our "inner universe" (Knowledge Management for Development (KM4DEV), 2012).



Figure 3: DIKW model

1.3 Selection of public works

Working as an information manager in the public sector, nationally or internationally, offers a chance to introduce changes and make an impact on a wider audience, offering a better or more efficient service or product. My selection of public works for this Context Statement has been guided by two criteria: 1) Public works in which I have taken a leading role in change management and 2) Public works which have had an impact on the wider community, outside the immediate organizational unit. Using this guiding principle, I excluded other public works, such as automation of certain processes and procedures, or information services and products of a primarily internal nature.

The first of my selected public works was led by a desire to improve the very slow and unreliable process of international cooperation agreements management and replace it with a printed collection, a set of two monographs. Today, it would be organized as an electronic repository, but 30 years ago it was an archival collection with proper finding aides and two printed books which served as distribution media. The impact reached beyond the Institute I was working for since it ended up in all Yugoslav diplomatic missions, as well as in the cultural and educational institutions that needed legal backing for their international cooperation.

My second selection impacted one entire ministry – the Sierra Leone Ministry of National Development and Economic Planning, as well as the national and international development stakeholders. The freedom to introduce and lead change was really great,

especially since there was not much that was already available in the country so any new development, information service or product was welcome.

The third selected public work had an impact on the global civil aviation community – government regulators, aviation companies, airlines, and airports. My role in leading the change from a set of local services and paper-based products was especially significant since no such service had previously existed in the ICAO, or for that matter within the United Nations System. For example, the first website or a very different concept for subscription services (i.e. ICAO eSHOP).

The reason for selecting INIS as my fourth public work lies in the fact that the conditions were ripe to move to an open access concept, despite the lack of good will and readiness to take that step. This became my opportunity and offered me a chance to lead INIS to a completely new and modern information environment. This impacted a wide segment of global research and development in the area of peaceful uses of nuclear science and technology.

These four public works were singled out from over 35 years of professional experience on three continents, in six different countries within a number of information management organizations, which I believe to be the most significant achievements in my career. They represent a selection of my public domain works that will be evaluated in this context statement. Listed in chronological order they are:

- A set of two monographs published by the Yugoslav Federal Institute for Scientific, Educational, Cultural and Technical Cooperation² (1982-1983);
- Work on the UNDP/UNESCO project – The Establishment of the Development Documentation Centre in the Ministry of National Development and Economic Planning, Sierra Leone (1985-1988);
- A set of four different information products and services designed, developed and implemented by the International Civil Aviation Organization (ICAO) (1988-2008);
- Work done on the International Nuclear Information System (INIS), modernizing it and making it an open source for Internet users (2008-2014).

This selection of public works represents best examples of my own style of leading change in the area of information management. It lists specific results, products and services designed, developed and successfully delivered, as well as a historical overview of the different stages of my professional development. Leading information management change covers my work in four different organizations (YUZAMS, UNESCO, ICAO and IAEA), in four different countries (Yugoslavia, Sierra Leone, Canada and Austria) on three continents (Europe, Africa and North America). The changes elaborated here encompass

² Original name: Savezni zavod za medjunarodnu naučno-prosvetnu, kulturnu i tehničku saradnju (YUZAMS)

paper-based, as well as electronic and computer-based products and services. They include:

- Printed books;
- Establishing an information unit, namely the Development Documentation Centre in Sierra Leone;
- CD-ROM creation for publishing and distribution;
- Setting up a controlled Web space for the exchange of information among 160 ICAO member states (ICAO-NET);
- Setting up a commercial website (ICAO eSHOP);
- Opening access to a previously restricted nuclear information database (INIS).

Even this short list of my successful endeavours clearly demonstrates the progress made from the use of printed materials to the more sophisticated use of digital and electronic publications, such as CD-ROMs, as well as from controlled and restricted websites to those which are commercially open and publically available. The professional tools which were available to information and documentation specialists, and which I personally chose, were not those that had been in use for a while and generally accepted, but rather those that had been recently introduced and not widely used. For example, the Development Documentation Centre in Sierra Leone was the only such centre in that West African nation. CD-ROMs were the first to be created by ICAO, while their public website³ was the first website created within the entire United Nations system.

When looking back at the context in which the change management took place, and the subsequent results that were achieved, I need to emphasise that there is no single factor which could be regarded as the main trigger, or the most critical. There was a spectrum of circumstances and factors which, from a historical perspective are easier to identify, although at the time of the actual public work, were not so evident. Such factors of leading change include:

- Sensitivity to user needs, first in realizing that there is a specific need which could be met with a new information service or product, and second by being flexible in order to adapt to changing needs which naturally occur over a period of time.
- A hands-on management style which allowed me to be directly involved with the issues being resolved, and the solutions being created, tested and implemented. In my opinion, remote management based strictly on meetings and reports, does not offer enough ground for understanding all of the intrinsic properties of the problem at hand. For example, in the early nineties, I invested considerable time in mastering some web programming languages such as HTML and PERL, which later allowed me to successfully

³ Initially www.cam.org/~icao, which later became www.icao.org

create, and manage related applications and to understand the possibilities and constraints of their use.

- Continued education and self-improvement is particularly evident in my career path. Obtaining three master degrees and finishing a number of professional training courses gave me constant exposure to new ideas and allowed me to challenge myself in new disciplines, such as information science, international relations, public administration and management. These were indispensable sources of inspiration for new and creative ways to improve the existing services and information products for which I was held responsible.

- Attending conferences helped me realize the importance of affiliations with other professionals and professional organizations⁴. Conferences provide a forum for proactive work where we can learn from others who are also facing similar challenges and who are trying to solve them in a creative way. It is also a testing ground to bounce off our own ideas and seek comments, opinions and suggestions from others. One of the things I learned early on was that attending conferences is not enough. We have to present at those conferences, which has proven many times to be an excellent way for self-development and self-improvement. This is reflected in a number of conference presentations that I have given around the world.

⁴ I am a member of the following international professional networks and groups: the GreyNet Resource Policy Committee and Conference moderator; the International Council of Scientific and Technical Information in Paris; the International Centre for Scientific and Technical Information in Moscow; the Special Library Association (SLA); ISO 3166 Maintenance Group.

2. Background

The Background section of this Context Statement elaborates two main sets of issues important for a more comprehensive understanding of my long professional career and proper placement of my public works within the field of information management. In this part, my three objectives are explained, and my personal motivation to embark on this journey is presented through a historical review of the various jobs I held.

2.1 Objectives

Besides the obvious objective of partially fulfilling the requirements for the award of Doctorate in Professional Studies by Public Works, as stipulated by Middlesex University, this Context Statement has other, personal and important objectives and significance. The busy world in which we live and work does not give us much time to look back and reflect on the things we have done, to think about why we did something in a particular way, and finally, to critically evaluate the outcomes of our previous endeavours, evaluating what worked, and what didn't work, hoping to learn something for future undertakings. It is expected that time spent in this way will increase our understanding, and encourage further creativity and innovation in libraries, information centres and knowledge management arenas.

Therefore, the three objectives of this Context Statement are (1) to critically evaluate my work during the last 35 years, (2) to explore its context and the main influences, theories, concepts, and stakeholders, and (3) to reflect on its impact and the lessons learned. Although objectivity is preferred, as is often the case when looking at ourselves and our work, subjectivity can prevail. The comparison of these relevant points and the use of identical methodology for their evaluation has been implemented throughout the Context Statement.

The three objectives mentioned above are complex in nature, but critical to evaluating our professional lives, as well as our lives in general, and is one of the most intriguing and challenging intellectual exercises we can undertake. Evaluating over 35 years of my professional experience as an information manager is no minor task.

My plan for reaching the objectives of the Context Statement is set out in two stages. The first stage includes the identification and selection of public works. Four sets of public works were selected. The second stage requires the proper elaboration of public works through their description, the identification of my role in a particular work, the review of its public impact, the listing of evidence regarding the public work itself and my role in it, and an evaluation of its influence on my professional life and development.

The underlying foundation for all of my selected public works is an assumption that they represented innovative results of creative thinking and the novel use of tools and resources available at the time, all skilfully combined and managed to bring a desired change and work related improvement.

Libraries and knowledge centres represent a fertile ground for creative change management. Change is happening daily in front of our eyes. Collections are being transformed; customers have different habits and needs; processing methodologies are simplified; information technology has dramatically changed; and expectations have dramatically shifted. Information and library creativity need to offer new ways of seeing and also for creating insights into new ways of knowing (Stoddart, 2013). All this requires proper leadership to expedite the changes towards the most rewarding outcomes.

2.2 Motivation

My love for books and information, for reading and libraries, started with a tremendous amount of time spent during my studies in various library and archive reading rooms and documentation centres. Although my perspective and role have significantly changed, my passion still remains. As a frequent library user, throughout my studies and professional career in managing major information systems and centres, one overarching goal has remained throughout –innovation in information management.

After obtaining my BA in International Relations from Belgrade University in 1978⁵, my career started with an assignment to organize documentation in one of the offices of the Yugoslav Federal Government, namely the Yugoslav Institute for Scientific, Educational, Cultural and Technical Cooperation. The successful organization of the Institute's document collection, and particularly, the growing number of requests for easy and quick access to some of their legal holdings, led to a desire to find a way to easily share this tremendous wealth of information in a more efficient manner. This is how the idea was born to make intergovernmental (international) legal agreements in the area of scientific, educational, cultural and technical cooperation available through a fully indexed and alphabetically arranged set of monographic publications. The result was a set of two monographs published by the Yugoslav Federal Institute which were widely distributed to all diplomatic and consular Yugoslav missions around the world and many academic libraries around the country. The first volume dealt with bilateral agreements, while the second volume covered a collection of multilateral agreements. It was a valued product, well received by many users, and it reinforced my desire to devote my entire professional career to information management.

⁵ I received MA from the Belgrade University, Faculty of Political Science, International Relations, in 1984

From the Federal Administration, I moved to the Yugoslav Centre for Scientific and Technical Information (YCSTI) in 1984, where I became the Deputy Director. Being the largest and most important information centre in Yugoslavia, it provided me with an opportunity to learn more about the value of information in scientific research and industrial development. It was also a great opportunity to visit similar centres within Yugoslavia, as well as neighbouring and other countries.

My work at YCSTI, and exposure at international conferences, attracted the attention of UNESCO⁶, who in turn offered me a job on their development project to establish a number of documentation centres within the government of Sierra Leone. It was at this time that I realised that I needed to improve my theoretical knowledge, so I obtained a MPhil degree in Library and Information Science from Loughborough University.

After spending over three years in Africa (1985-1988), I joined the World Bank in Washington, D.C., where I worked in their Archives Division on developing an automated records accessioning system using, at that time, a very popular MINISIS database which ran on a HP 2000 mini-computer. At the end of 1988, I moved from the World Bank to the International Civil Aviation Organization (ICAO) in Montreal, Canada. During my 20 years at ICAO, I developed a number of information products and services, following the latest trends using modern IT and introducing Internet and the Web to the Organization. Automation of ICAO Registry functions and the Archives were a few of my successful projects, followed by the establishment of the first ICAO public website, first extranet site, creation of a commercial site for the sale of ICAO documentation, and the use of CD-ROMs - at the time considered a modern distribution medium.

Work on these large information sharing projects indicated the importance of having a good understanding of management principles and related skills, which triggered my part-time studies at McGill University and the University of Concordia, where I obtained my post graduate diploma in public administration in 2006. This has proven many times to be an important and valuable skill in my work.

In 2008, I received a position at the International Atomic Energy Agency (IAEA) in Vienna, as Head of the Nuclear Information Section (NIS). NIS encompasses the International Nuclear Information System (INIS), one of the world's largest databases of nuclear literature, the IAEA Library, and an IT Systems Development and Support Group (SDSG), giving me an opportunity to use all of my acquired skills in organizing a database collection of almost 4 million records, coordinating cooperation with 153 INIS Members⁷, leading the International Nuclear Library Network (INLN) with member libraries from over 50 countries, chairing the NUCLEUS Steering Group, the main IAEA body in charge of overseeing all databases and information repositories produced by the IAEA, as well as,

⁶ United Nations Educational, Scientific and Cultural Organization (UNESCO)

⁷ At present, 129 countries and 24 international organizations are INIS Members (www.iaea.org/inis)

representing the Department of Nuclear Energy at the Information Technology Steering Committee.

Regarding the impact of various information and knowledge management theories and publications, my initial work in the area of information and documentation management was influenced by the works of Tefko Saracevic (1970) and Judith Wood (1981) and their concepts of information consolidation and repackaging. In their view, the packaging of information was the physical recording, arrangement and presentation of information on a given medium and in a given form. Repackaging was the rearrangement of physical media and/or forms in which information was presented, which is tailored to the requirements of a specific clientele. In other words, the same concept continues to be applied in the form of user needs and customer centred information products. My later work was theoretically inspired by Claire Guinchat and Michel Menou (1983), who were also my UNESCO colleagues. Their work was primarily geared toward developing countries in which the organization of efficient library and documentation structures was being held back by the absence and shortage of trained staff. Their views, and my work on a development project in Sierra Leone, encouraged me to get involved with training my local counterparts, organizing study tours and student visits, as well as giving lectures at the Fourah Bay College in Freetown, the oldest and the first western-style university built in West Africa. Also during my tenure in Montreal, I gave presentations and lectures to students at the McGill School of Library and Information Science.

In the 1980s, as a form of applied artificial intelligence, expert systems became popular around the world and the focus of mainstream information research (Savic, 1995). I designed and developed a fully operational CUTT-x: An Expert System for Automatic Assignment of Cutter Numbers (Savic, 1996). This unique program was used for a number of years by the ICAO Library.

The next phase of my professional work was impacted by the introduction of the Internet and Web-based technologies. This period started with my development of the first ICAO website in early 1993, which, in fact, was the first running website within the entire United Nations system. This was followed by my introducing the first Extranet site for ICAO member states in 1999, the first commercial site for the on-line sale of ICAO documentation in 2001, and the sale of CD-ROM based documents, with an incorporated search facility, in 1997. It is important to mention that all these projects were accomplished while I was in charge of the ICAO Library. On a wider scale, it also demonstrates the importance of having skilled information professionals in charge of organizing information and creating and managing information and knowledge products. If coupled with excellent IT and programming skills, information and knowledge managers can create far better and more useful systems and services, than is the case with many organizations where commanding roles lie with IT professionals.

The latest theoretical and, in fact, a very practical impact came with the appearance of Web 2.0 (O'Reilly, 2005) and the related concept of Library 2.0 (Casey, 2006). According to this theory, the library is user-centred, provides a multi-media experience, is socially rich, and communally innovative. Some of my latest articles are devoted to one of its main elements – the democratisation of information in general, and particularly the democratisation of scientific and technical information (Savic, 2013) and (Savic, 2010). Directly related to this concept of Library 2.0 is the open access movement (Open Access Directory, 2014) which aims to achieve unrestricted access via the Internet to peer-reviewed scholarly research publications. In some of my latest presentations made at international conferences, such as the Grey Forum 3.1, Grey Literature and Policy Development: The Pisa Declaration, held on 7 April 2014 in Pisa, Italy (Savic, 2014), I have spoken in favour of open access in general and in particular of open access to nuclear information.

On the other hand, I believe that I have made some contribution to knowledge in the area of information management. This contribution lies implicitly in the significance of my work results in the information management area, and in the fact that I have been pushing the boundaries of practice, while using every possible opportunity, like presentations at various conferences and extensive publishing, to further promote it.

3. Public Works

The public works reviewed here contribute, in three important ways, to understanding the role which leadership plays in information management. Firstly, a spectrum of various products and services is presented which give a historical overview of information management which is in constant motion. Secondly, the public works which I selected make a critical contribution to understanding the problems and practical challenges in implementing change in information management. Thirdly, the Context Statement generates ideas which may be useful in further understanding the practical aspects of change management and in promoting creativity and innovation in general, and particularly in information management. This important topic receives some attention from theoretical researchers, but, there is a paucity of practical tools that can be easily used to create an environment that supports development of leadership skills necessary for successful change management.

Each of the following four public works is reviewed using the same methodological approach. The basis for this methodology is a four point matrix, with each point concentrated on a specific facet of each public work. The following facets are examined:

- Description
- My role
- Public impact
- Evidence.

This contextualized matrix was useful in the sense that its purpose was evident, and it provided clear questions and answers, complete facets, pertaining to each public work. This matrix can also be interpreted as a kind of check-list to help identify, review and evaluate different aspects of each public work and to better understand my personal progress and professional development. It also ensures a certain degree of consistency in the structure of the Context Statement.

Based on the full description of each public work, its role, public impact and evidence, a separate part critically explores the accumulated learning links between each of the works, reflecting the development of my knowledge and my role as a professional practitioner. Embedded in this there is also a review of practical paths which had to be negotiated in the context of my work, their operationalization and the way they were perceived by the final users/audience.

3.1 Federal Institute for International Cooperation, Yugoslavia

Listing my public works in chronological order, I begin with my first employment at the Yugoslav Federal Institute for International Scientific, Educational, Cultural and Technical Cooperation in Belgrade. My first job at the Institute began with a competitive examination, followed by a year of probationary work and was confirmed only after passing a Comprehensive State Exam. My job description included time spent in almost all the departments at the Institute, however due to the internal requirements at that time, most of my time was spent with public information, working on the Institute's Journal and in their Library and Archives. It was a Library with mainly legal materials, while the Archives hosted many grey literature⁸ documents, such as annual and other work reports, project documents, evaluation and feasibility studies, and study reports by many Yugoslav mission experts and foreign experts who were visiting Yugoslavia. It was my sudden and intensive dive into the world of information and documentation which, unknowingly at the time, became my main career path.

A number of interesting projects were carried out at the Yugoslav Institute, but the one I selected as my very first public work to be evaluated in this Context Statement is a set of two monographs which I prepared and edited, published by the Yugoslav Federal Institute. This set included:

- Savic, D. (1982) (ed.) *Yugoslav International Agreements on Scientific, Educational, Cultural and Technical Cooperation: Bilateral Cooperation*. Beograd: YUZAMS.
- Savic, D. (1983) (ed.) *Yugoslav International Agreements on Scientific, Educational, Cultural and Technical Cooperation: Multilateral Cooperation*. Beograd: YUZAMS.

A. Description

During the seventies and eighties, the Federal Republic of Yugoslavia was very active internationally, cooperating with many countries around the world. It had equally good relations to both Eastern Warsaw Pact countries and Western NATO countries. However, the most intense cooperation took place between developing countries through a non-aligned movement which was founded in Belgrade in 1961 by Yugoslavia, Egypt, India, Burma and Indonesia. Besides political and economic cooperation, great attention was devoted to scientific, educational, cultural and technical cooperation. These types of cooperation were always based on some legal instrument, such as a cooperation agreement or an exchange of diplomatic notes. Due to the number of countries and the wide subject area covered, there were a large number of documents distributed and kept in different repositories, official publications, embassies, ministries, etc. Since this was the

⁸ Grey literature "is produced on all levels of government, academics, business and organization in print and electronic formats not controlled by commercial publishing i.e. where publishing is not the primary activity of the producing body" (GreyNet, 1997); (GreyNet, 2004).

time before widespread use of computers and well before the Internet, many Yugoslav diplomatic missions, university and research centres, cultural and other organizations had problems locating basic legal documents on which to build their international ties with corresponding foreign institutions. This apparent need for reliable and easily accessible documentation triggered my proposal to carry out a large scale project to identify, collect and properly present the legal instruments in an easy to use format. The end result was a published set of two monographs. The first was a collection of *Bilateral Agreements* (totalling 525 printed pages) signed with the USA, UK, France, USSR, Germany, and other countries. The second monograph was a collection of *Multilateral Agreements* (comprising 68 pages of full-text legal documents) with United Nations agencies and other international organizations.

A. My role

I had the complete and sole responsibility for all elements of the project, including its conceptualization, attainment of the required approvals, and collaboration from political and other decision makers, along with the project implementation, document compilation, printing preparation and overview, organization of distribution, and follow-up. The major portion of the project activities was devoted to research and identification of the relevant latest legal instruments for each of the countries that had an agreement with Yugoslavia. Some of the agreements went through official channels, becoming part of the official country legislation and were then published in the Official Gazette, while others were modified or superseded by ad-hoc modifications or the exchange of diplomatic notes. Preparation of the first monograph took much longer than the preparation and printing of the second containing multilateral agreements. This was mainly because of my inexperience in dealing with political and financial decision makers who were not very responsive and supportive of the proposed project. While my enthusiasm in the project was not reciprocated, which was somewhat disappointing, this did not stop me from finishing the project. The turning point was a presentation given to top management, who in turn, gave full support for completing the project.

In retrospect, many aspects of this project were a great learning experience. Having a creative idea and the capability to turn it into a final product or service is not enough for success. It is only a starting point. I was fully convinced that it was worth doing, irrelevant of the effort and time that the project would take. However, I needed to convince others who did not share my enthusiasm. Having a high level 'champion' (this concept became popular in management theory much later), to support and 'sell' the idea to top management is of crucial importance. Without such support coming from the right person, turning a creative idea into a successful product is much more difficult. Special attention should be given to finding such a champion and nourishing that working relationship in order to avoid the frustration of possible failure due to lack of support.

Another lesson learned is the importance of project teams and team work. This was really a one-man-project that was successfully completed because of the great enthusiasm which is characteristic of young employees willing to spend very long hours to prove that they can accomplish something. There is nothing wrong with this approach; however in order to secure faster completion and wider acceptance, it is more beneficial to work in teams. These project teams do not need to be large, even two or three team members are sufficient. However the impression made by a team and through team work is always much stronger than something prepared and implemented by a single person.

From a technical, information profession point of view, this public work can also be critically evaluated. The main deficiency, although not visible from the outside and from a user perspective, was the lack of built-in sustainability measures. In other words, no systematic physical repository of legal instruments and corresponding notes was left for future updates. The printed publication was the only traceable piece of information that remained about the resources consulted and the methodology used. All information management projects, if properly conducted, need to have complete project documentation available to those people who might work on a future revision. In their article, Schindler and Eppler (2003) examine reasons for project amnesia (i.e. not retaining project insights), and conclude that they are all related to four elements, namely time, motivation, discipline, and skills. They place special importance on having relevant project documentation—such as a feasibility study, a summary, a technical report or a user manual—which has to be produced to meet minimal documentation standards. They conclude that omitting how particularly efficient solutions have been built or how specific issues have been addressed, leads to the risk of knowledge loss and serious problems for organizations in their later attempts to repeat or improve the same project. In their article on organizational learning through projects, Newell and Edelman (2008) demonstrated the importance of documenting project learning, but emphasised in their research data that project teams are often remiss at documenting their learning.

A good example of a new practice to avoid such losses is the introduction of research data repositories. Particularly useful are open access research data repositories. Today, more and more publishers and research funding agencies require that research data used in preparing academic papers be made publically available by the authors in a usable format. This is usually done through a public data archive. A good example is Data Archiving and Networked Services (DANS)⁹ which hosts research data from GreyNet¹⁰, a networked system dedicated to research, publication, open access, and education in the field of grey literature.

⁹ <http://goo.gl/Jrijx>

¹⁰ <http://www.greynet.org>

B. Public impact

The impact of having these two monographs prepared and published was very positive. Many letters of acknowledgement and congratulations were received from various stakeholders. This state of the art public reference work was used for many years and can still be found in some former Yugoslav embassies around the world, despite the dissolution of Yugoslavia as a country. The Institute that I worked for and that published the set of monographs was very proud of those publications, which came to be widely used in some government ministries, such as the Ministry of Foreign Affairs. As a result, I was offered a permanent position with the Institute.

C. Evidence

Since this public work was performed over thirty years ago, the only remaining evidence is two monographs that are still available in some libraries. Both of which are available via the National Library of Serbia¹¹.

The successful completion of this project, the notes of appreciation received and a permanent position at the Yugoslav Institute made a huge impact on my future career and work. Firstly, I realized that the field of information is an interesting area that offers many opportunities for professionals.

This was a formative period of my professional career during which I had my first exposure to computers. During the course of preparing the publication of the two collections of agreements, an opportunity presented itself. In 1982, I learned BASIC programming language on a Honeywell mainframe computer. It was only a very general introduction to the world of computers, but it provided an early glimpse into the world that was to come.

During that time one thing became evident. The trend of following, getting to know, learning, and actually using new technology became almost my mantra throughout the rest of my professional career. I believe that being open to new ideas and seeking new solutions is one of the most important characteristics that today's information and knowledge workers, and especially managers, should possess.

¹¹ Original titles of the bibliographic references:

- Medjunarodni ugovori SFRJ o naučnoj, prosvetno-kulturnoj i tehničkoj saradnji (Savic, 1982).
- Medjunarodni ugovori SFRJ o naučnoj, prosvetno-kulturnoj i tehničkoj saradnji : multilateralna saradnja (Savic, 1983). Source: National Library of Serbia (<http://www.nb.rs/>)

3.2 Development Documentation Centre, Sierra Leone

After a successful career with the Yugoslav Institute and the Yugoslav Centre in Belgrade, I decided to challenge myself at an international level. The choice was UNESCO, where I was selected to lead their project entitled *'Establishment of a Development Documentation Centre in the Ministry of National Development and Economic Planning, Sierra Leone'*¹². I joined the project from its inception in 1985 and remained until 1988. This was a small scale UNDP funded project with an annual budget of roughly US\$ 250,000. I was the project manager and the only recruited international expert. There was one locally recruited consultant, while several international consultancies were organized to carry out project evaluations. The national counterpart was a trained librarian with some general support staff. The project overview was organized jointly by the Ministry, the UNDP Office in Freetown and UNESCO Headquarters in Paris, France.

A. Description

The aim of the UNESCO/UNDP project was to establish, create and organize a new Development Documentation Centre (DDC) in the Ministry of National Development and Economic Planning in Freetown, Sierra Leone. In less than two years, a fully functional Development Documentation Centre was established on the modern premises provided by the Ministry. A comprehensive set of development related documents was collected, organized and made available to the Ministry, the Government, and the people of Sierra Leone. Many UN consultants and experts, as well as other users, benefited from its existence and the documentation that was collected. The DDC gained great popularity and was praised for its excellent achievements, not only in organizing existing documentation, but also for promoting the use of information and documentation in improving general development efforts. It was officially inaugurated by Sierra Leone's First Vice President at a grand opening ceremony. The successful launch and work of the DDC attracted the attention of other Government Ministries. The UNDP Resident Representative, whose role is that of the official United Nations representative within the country, was requested to fund the establishment of similar centres in other Government Ministries. The Ministry of Agriculture, through collaboration with FAO¹³, the Ministry of Labour through cooperation with ILO¹⁴, and the Ministry of Foreign Affairs through UNESCO, were afterwards equipped with smaller documentation units, as well.

B. My role

For over three years, as a UNESCO Expert for Information and Documentation, I was in charge of the UNDP/UNESCO development project. My responsibility as a Development Project Manager included all the professional library information aspects of setting up the

¹² The UNDP/UNESCO project SIL/82/023.

¹³ Food and Agricultural Organization (FAO), Rome, Italy.

¹⁴ International Labour Organization, Geneva, Switzerland.

DDC; managing its document and information collection; managing the facility; managing human and financial resources; networking between different stakeholders – UNDP, UNESCO, and the Government Ministries, and securing financial support from the UNDP, the main financial donor. Being selected as one of the best development projects at that time in Sierra Leone, my job also included intensive promotional and public relation activities regarding the work done by the United Nations and the impact of its projects.

C. Public impact

The Republic of Sierra Leone is a country in West Africa that is bordered by Guinea to the northeast, Liberia to the southeast, and the Atlantic Ocean to the southwest. Sierra Leone is a constitutional republic with a directly elected president and a unicameral legislature. The country has a tropical climate, with a diverse environment ranging from savannah to rainforests. It covers a total area of 71,740 km², with an estimated population of 6 million (2011 United Nations estimate) (Wikipedia, 2014). When I was in Sierra Leone, the country had just over 4 million people and was listed by the United Nations as one of the ten least developed countries in the world, while being the second leading producer of natural diamonds. It is also among the largest producers of titanium and bauxite, a major producer of gold, and has one of the world's largest deposits of rutile. Sierra Leone is home to the world's third-largest natural harbour. Despite exploitation of this natural wealth, 70% of its people live in extreme poverty (Wikipedia, 2014). In such a social and economic climate, work on the project was not easy, but at the same time it was very rewarding. Even the smallest result resonated far and wide.

The impact of the successful establishment of the DDC was manifold. The Ministry of National Development and Economic Planning, for the first time, had a functioning, well-established documentation centre. UNDP was proud to point out this project as one of its best practices for managing development projects.

Many students and researchers interested in development and economic planning came to the DDC to use its rich and well organized collection. UNDP and other Freetown-based United Nations agencies were gladly donating documentation to the DDC, knowing that it would be made available and preserved.

On the national library and information front, students from the national college were experiencing library PCs in action and learning ways to organize, manage and run a documentation centre. The interest in information technology deployed was particularly impressive, even though the hardware was based on the first generation IBM PCs and the software was a UNESCO developed CDS/ISIS running under a DOS operating system.

Another benefit of creating a Development Documentation Centre in the Ministry of National Development and Economic Planning was the use of computers and spreadsheet software to create National Development Estimates (Development Budget) used for

debates in the Parliament of Sierra Leone. What previously took days of retyping and excessive time in Parliament discussions was, for the first time in 1987, accomplished overnight; and, to the representatives' great surprise, submitted back to them the following morning.

The DDC continued to function for a number of years after completion of the project under the direction of a well-trained Librarian (my project counterpart). Unfortunately, the civil war (1991-2002) that hit Sierra Leone closed many institutions, including the DDC. This was one of the most gruesome wars in post-independent Africa. The Sierra Leone civil war became a vile stage for man to show hatred towards fellow man, in the form of rape, murder, displacement and other crimes against humanity, which left a permanent scar on the people of Sierra Leone. Sierra Leone was meant to be the shining light of Africa; it had all that was needed to engineer economic and political prosperity. It was also the first country to establish a university in West Africa, the Fourah Bay College. These factors ought to have made Sierra Leone a living paradise; instead, it became a living hell (Sierra Leone Civil War, 2010).

D. Evidence

Unfortunately, the best evidence, the Development Documentation Centre itself, was completely destroyed during the civil war. Equipment was taken away, the document collection burnt, and the staff fled the country. My national counterpart who was instrumental in continuing the work of the DDC after the project terminated, managed to escape the horrors of the civil war and landed a job with the IAEA, later moving to another library position at OPEC Headquarters in Vienna.

Most of the document-based evidence is still available at the UNESCO Archives <http://www.unesco.org>, and hopefully from the UNDP. Besides these resources, other bibliographic references to DDC are found below:

- UNESCO (1992) *Establishment of Development Documentation Centre: Sierra Leone: Project findings and recommendations (Mission Report)*. UNESCO/UNDP. Paris, France: UNESCO/UNDP. 35p. <http://goo.gl/4jRYH4>
- Savic, D. (1991) *The Role of a Documentation Centre in Development Planning: A Case Study of the Development Documentation Centre in Sierra Leone*. Ann Arbor, Michigan: UMI (MPhil theses, Loughborough University of Technology, United Kingdom).
- Savic, D. (1991) *Information and Documentation Services as a Tool for Improving National Development Planning: A Case Study of Sierra Leone*. International Library Review, 23, 215-227.
- Savic, D. (1999) *Former United Nations Volunteer in Sierra Leone*. World Volunteer Web, 13/12/1999. <http://www.worldvolunteerweb.org/news-views/volunteer-stories/doc/former-united-nations-volunteer.html>

- *Effects of the Civil War and the Role of Librarians in Post–War Reconstruction in Sierra Leone*. World Libraries (Kargbo, 2002).

Although country based, this development project opened new horizons towards international cooperation and assistance, while showing the importance of the role international community can play. The global impact of information, one of the topics of my later thematic review, further elaborates on this perspective of later public works more closely related to the global reach of information through devoted websites, databases and information systems.

The period spent in Africa working on the UNESCO/UNDP project was one of the most exciting in my career. Challenged in almost every conceivable way - from physical survival in tropical heat surrounded by malaria mosquitoes and other 'exotic diseases', to the pressure of delivering high-quality project results on time, to simply clearing equipment through customs, which at times took months - all added to my experiences. My personal desire to introduce change, creativity and innovation, and my belief in hard work, collaboration, flexibility and the constant search for optimal solutions prevailed; and the project became one of the best UN projects in Sierra Leone at that time. I will cherish this experience for the rest of my life.

3.3 International Civil Aviation Organization (ICAO)

After my project experience in Africa and the short time spent working for the World Bank in Washington, D.C., I joined the International Civil Aviation Organization (ICAO)¹⁵ in Montreal, Canada, at the end of 1988, where I remained until 2008.

ICAO is a specialized United Nations agency, "created in 1944 upon the signing of the Convention on International Civil Aviation (Chicago Convention). ICAO works with the Convention's 191 Signatory States and global industry and aviation organizations to develop international Standards and Recommended Practices (SARPs) which are then used by states when they develop their legally-binding national civil aviation regulations. There are currently over 10,000 SARPs reflected in the 19 Annexes to the Chicago Convention that ICAO oversees, and it is through these SARPs and ICAO's complementary policy, auditing and capacity-building efforts, that today's global air transport network is able to operate over 100,000 daily flights safely, efficiently and securely in every region of the world" (Source: www.icao.org).

Since I spent so many years at ICAO, there were a number of potential public works to select from. I decided to select not one, but four different information products and services in order to show my professional progress and development throughout these

¹⁵ More information about ICAO is available from their website <http://www.icao.int>

years, as well as to show some very different areas, products and services, where creativity and innovation were demonstrated.

The four information products and services selected, which I created during my tenure with the International Civil Aviation Organization include:

- The first website within the United Nations www.icao.int (1993)
- ICAO's first commercial CD-ROM: Rules of the Air (1997)
- The first ICAO Members' area website: ICAO-NET (1999), and
- ICAO eSHOP (2001).

This selection demonstrates almost a complete switch in my professional work, as well in the work of other information professionals, from classic paper-based products, to the newly introduced world of electronic publishing and electronic publications. Three of these services were websites (public, restricted, and commercial), while one of them was in the area of electronic, CD-ROM based publishing and distribution.

A. Description

Although some of the selected works might not seem to be much from today's point of view, these examples of my work should be put into historical perspective and looked at within the constraints of a smaller international organization, such as the ICAO, and the sudden appearance of a completely new information and communication technology, namely, the Internet. Few people at that time were able to foresee the power and extent of the change that was soon to become so overwhelming and omnipresent. Most of the things associated with libraries and information management were to be drastically altered. Library card catalogues were being computerised and made available remotely; the librarian's presence changed from local to global; paper was being replaced by electronic documents; communication became immediate due to the wider use of emails, list servers, bulletin boards and forums - all of which changed the librarian's reference and research roles.

In January 1993, there were only fifty Web servers throughout the world; by October 1993, there were over five hundred (Wikipedia, 2014). At the end of 1993, ICAO had created and made public its first website. This made ICAO the first United Nations (UN) agency to have a Web presence. Having the organization's website created, maintained and managed by a library became an issue of constant tension with the IT Department. IT believed they should be in charge of such an endeavour, although they were not willing to take a risk and make the initial investment. In fact, the funds they were requesting were exorbitant compared to the actual cost, which was much lower. This particular episode taught me a lesson in both cooperation and risk taking. We cannot always count on standard players to deliver innovation. Information professionals need to be proactive and take the first steps to deliver products and services they believe in, irrelevant of the

potential risks involved. Still, I do not advocate that we not cooperate with other departments. We need this cooperation; particularly the cooperation with our IT colleagues, but it should be on an equal footing and mutually beneficial.

In 1997, ICAO created a Working Group to review the feasibility of producing their first CD-ROM. After months of deliberation, it was decided that such a project would be too expensive and would not yield sufficient benefits for the Organization. Following this decision, the Director of Administration asked if I would look into it and give my opinion. A few months later, with a very minor investment in the purchase of a CD-ROM writer – considered expensive at the time – I managed to create and produce the first CD-ROM for ICAO. From today's perspective, it was a simple PDF-based, multiple document, and searchable thematic CD-ROM that covered a specific set of ICAO documents related to the Rules of the Air. It was immediately a great success. It was shown to the top managers, including Dr. Assad Kotaite, the President of the ICAO Council, who gave his personal endorsement. Based on my suggestion, the CD-ROM was copied and made available for sale as the first ICAO e-publication, regularly updated and maintained. Within just a few months, considerable revenue was generated for ICAO from the sales of that single CD-ROM. Additional topics were proposed for further CDs, which soon thereafter became a regular part of the ICAO Catalogue of Saleable publications.

This is an amazing example of how, when using creativity and sustained work, new products and information services can be created for the benefit of all involved. This is exactly the role of information professionals - to promote new technology and find and propose ways for its wider implementation.

The introduction of the two products mentioned above led to the creation of a third one, which became even more important for the work of ICAO and its relationship with its member states. How did this third product, in fact a service, come to fruition? The existing public website was slowly becoming popular for ICAO member states and they were requesting more and more information to be accessible through this site. They also liked the CD-ROM, but ICAO was not able to sell them the CD-ROM, since according to their regulations, member states received all the products free of charge. Production and distribution of CD-ROMs was, at that time, still expensive, so the solution was to create a special password controlled website offering free access to the CD-ROM for member states. In 1999, I created ICAO's first members' area website, named ICAO-NET. Controlled access and password protection enabled us to accommodate the needs of our main users – ICAO member states – and give them access to many publications, and correspondence that was specific to each of the member states.

As explained above, the first two products led to the creation of the third one, which in turn led to the production of the fourth. The fourth service was a new commercial website named ICAO eShop. Following up on the example of the ICAO-NET, ICAO eShop offered full texts of ICAO saleable publications to its paying customers. I based the website on a

set of PERL programs that controlled access, and based on the user profile, offered different menu options and lists of different documents and correspondence. It was a very simple yet, at the same time, a very efficient creation that required inside knowledge of ICAO documentation, its distribution procedures and a substantial knowledge of computer programming (HTML, PERL, JavaScript). An important lesson from that project was the requirement for simple solutions. We all need to be creative and innovative, but it needs to bring practical value and a simple solution. Don't make things more complicated. The simpler, the better!

B. My role

All four information products and services were based on my own creative ideas and initiatives, and relied on me developing and implementing them. Besides making official proposals and convincing the decision makers of their value and feasibility, my job also included the actual implementation of all the projects, together with software development, coding in PERL, HTML and JavaScript, deployment and maintenance. It should be noted that this was done with a very small library team (3-4 members), and despite a disgruntled IT department, who thought these projects should have been under their auspices, but who in fact, never demonstrated any willingness or initiative to get them started.

The decision to set up the first website, the first ICAO-NET as an extranet site for the member states, and the ICAO eSHOP as a commercial website, came from a practical need to bridge the geographical and financial gap between information users and the information available within ICAO's Archives and the Library. It started with analysing the Library's visitor log, which indicated that the majority of the visitors came from McGill University and were looking for ICAO technical publications which were pricey, but were required reading material for their studies and research. At the same time, the majority of library loan requests came from member states located around the world, which did not have physical access to our library facility. Making at least some of the documents available on-line in full-text became an efficient and effective way to help our potential users.

Disseminating and sharing information through referral work also played a major role in deciding on the Web content. Each of the member states had a depository library for ICAO publications, but quite often this was not known to students and researchers. By making such a list public, it quickly became one of the most frequently visited pages on the ICAO website.

The decision to create an extranet for the sole use of member states came after a study, which concluded that the majority of ICAO document collections available in national civil aviation authorities were poorly organized, outdated, and missing major documents. Since ICAO publications were free to national authorities, this was used as an argument to make

ICAO-NET a password controlled website in which the most current documents were made available in an organized manner.

This all demonstrated that good and creative initiatives, coupled with proper actions, can lead to major leaps forward, bringing benefits to the whole organization and opening the door to reposition the library, its role, functions and services.

C. Public impact

The impact of opening access to the information products and services mentioned above was immediate and remarkable. For the first time, the public gained free and immediate access to the internal work of ICAO, making the wealth of ICAO information and documentation easily accessible. Access was given to:

- *Full-text documentation* - meeting and General Assembly proceedings, ICAO Journal and News Releases, Resolutions in Force;
- *Reference materials* - FAQ, history, organigrams and structure, lists of contacts for contracting states, vacancies, catalogues, statistical information and forms;
- *Databases* - Aircraft Type Designators, Aviation Training Directory, DAGMAR, Library catalogue.
- *Regional Offices responsibilities, meetings, regional groups (e.g. EANPG, APIRG), Regional e-publications.*

ICAO member states were able to achieve considerable savings by relying on a unified and reliable centrally located collection of aviation documents, instead of having to separately maintain their collections with hundreds of different documents, editions and versions. Specific documents available through ICAO-NET, which were only available to member states, included restricted meetings and conferences, ICAO Council and Subsidiary Bodies documentation, ICAO DGCA Directory, many electronic publications, legal information, safety oversight information, and ICAO State Letters.

Commercial aviation organizations gained easy and ready access to required regulatory documents produced by ICAO which included International Conventions and Protocols, ICAO Annexes, Air Traffic Management documentation, and Annual Reports of the Council. This list was regularly updated and expanded.

This particular work represents an excellent example of the global impact information can have, which is one of the thematic topics discussed later. The impact of easily available information resources was felt in all corners of the world, in public, as well as in commercial institutions and organizations.

D. Evidence

While preparing this part of the evidence, something struck me and made me think very hard about the way we treat and preserve the present moment and the documentation related to it. The public works discussed in this section cover 1993 - 2008. Almost all of the evidence was e-based. It should have included websites, CD-ROMs, PowerPoint presentations, internal reports and project documents. Unfortunately, most of that has literally disappeared. All the websites mentioned here have been completely redesigned or even deleted. It proves that our e-heritage is in danger of completely disappearing. It will be difficult to recreate or review what we have previously done. Many organizations lack sustained policies for electronic preservation, leaving the past to be erased and forgotten. Luckily, several Internet sites have made it their mission to preserve the Web as a historical record for future exploration. One such site is the Web Archives Way Back Machine¹⁶. Using their screen captures, I included some historic images of ICAO websites in figures 4, 5, and 6 below:



Figure 4: www.icao.int - 3 December 1998

¹⁶ www.archive.org



Figure 5: www.icao.int/icaonet - 28 April 2001



Figure 6: www.icao.int/eshop - 14 August 2001

Some easier to find evidence based documents and presentations are available in the Appendix 1: Evidence of Public Works.

The years spent working at ICAO were very rewarding. From the very beginning, opportunities to make changes and introduce innovations presented themselves. The four achievements mentioned here are only the major ones. There were many others, such as automation of the mail registry functions, development of a complete library integrated system (ILS) using MS-ACCESS, the introduction of bar-code readers for registry files and library circulations, and large scale digitization projects of archival materials and their placement on the Web. Unfortunately, due to the current management's lack of

understanding for the value of archives and archiving, many of these very old digitized documents have been removed from the ICAO website.

This brings me to critically evaluate my own work and to the most interesting question – what would I do differently today if I had a chance to do it over? The answer, unfortunately, is not the most optimistic one. It deals with trust in shared values. Quite often we base our work relationships on an assumption of common values – “explicit or implicit fundamental beliefs, concepts, and principles that underlie the culture of an organization, and which guide the decisions and behaviour of its employees, management, and members” (BusinessDictionary.com, n.d.). But in reality this is not the case. My core belief is that preserving information and documentation, especially those with archival value, is good for us all, be it users or holders of information. Under this assumption, lots of work, time and effort went into the digitization of thousands of documents from the ICAO archives. I believed that it would remain on the ICAO website for perusal by students and researchers for a long time. I was wrong! The documents are gone. If I knew then what I know now, I would have found a professional institution dealing with document preservation, such as national archives, and given them a copy of all the electronic holdings. Being professionals in their field, I am sure that a national archive would have kept those documents for future generations. To illustrate the importance of this, it needs to be mentioned that some unique documents were kept in the ICAO archives and on the ICAO website. An example is a collection of ICAN¹⁷ documents of which only one copy existed in the entire world - at ICAO.

3.4 International Nuclear Information System (INIS)

After exactly 20 years at ICAO in Montreal, I joined the International Atomic Energy Agency (IAEA) in 2008 as Head of the International Nuclear Information System (INIS). The IAEA headquarters is in Vienna, Austria, so once again, I was back working in Europe.

The IAEA is regarded as the world's centre of cooperation in the field of safe, secure and peaceful uses of nuclear technologies. It was set up in 1957 as the world's "Atoms for Peace" organization within the United Nations system. As of February 2014, the IAEA had 162 member states. The IAEA Secretariat – “the international body of staff tasked with running the IAEA - is made up of 2500 multi-disciplinary professional and support staff from more than 125 countries. They come from scientific, technical, managerial, and professional disciplines” (Source: www.iaea.org)

¹⁷ The forerunner to ICAO was the International Commission for Air Navigation (ICAN). It held its first convention in 1903 in Berlin, Germany but no agreements were reached among the eight countries that attended. At the second convention in 1906, also held in Berlin, 27 countries attended. The third convention, held in London in 1912 allocated the first radio call-signs for use by aircraft. ICAN continued to operate until 1945 when it was replaced firstly by PIAO and after that by ICAO (Wikipedia, 2014).

My initial responsibility was to head INIS. The role of INIS is to foster the collection and exchange of scientific and technical information on the peaceful use of nuclear science and technology; maintain a unique nuclear related thesaurus, increase awareness in member states of the importance of maintaining efficient and effective systems for managing such information; provide information services and support to member states and to the IAEA; and to assist with capacity building and training (Source: www.iaea.org/inis).

At the beginning of 2012, “the Director General of the IAEA approved the overall restructuring of the Department of Nuclear Energy (NE). This included the creation of the Nuclear Information Section (NIS) which consists of INIS, the IAEA Library, and the Systems Development and Support Group” (Savic, 2012). This restructuring and the creation of NIS provided an opportunity for the further enhancement of existing information products and services, and the introduction of new ones - all geared towards higher organizational efficiency and effectiveness. My new job and title was Head of the Nuclear Information Section.

This last set of public works relates to my current position at the IAEA, as Head of the Nuclear Information Section (NIS), and particularly with my responsibilities towards the International Nuclear Information System (INIS). Some of my achievements during my tenure with the IAEA and those worth mentioning in the Context Statement include:

- Making INIS publically available, an open source, to all Web users. This was a very concrete step towards the democratisation of nuclear related scientific and technical information. It was previously a closed, restricted system that required registration and different levels of control;
- Moving away from a typical library catalogue to a Google-based full-text search engine, giving access to the INIS Collection through a much friendlier and easier to navigate user interface;
- Strategically repositioning INIS so that it became a single access-point, not only for the INIS Collection, but also for other IAEA information and documentation collections;
- Making the INIS Collection available through Google.com and Google Scholar.

A. Description

The Statute of the International Atomic Energy Agency (IAEA, 1956), Article III, states that the Agency is authorized to foster the exchange of scientific and technical information (STI) on peaceful uses of atomic energy. Article VIII, which is devoted to the exchange of information, likewise states that the Agency’s goal is to



Figure 7: INIS

foster the exchange of STI on the peaceful uses of atomic energy, to encourage the exchange among its members of information relating to the nature and peaceful uses of atomic energy, and that it shall serve as an intermediary among its members for this purpose. Based on these Statute provisions, INIS was created in 1969 to provide computerized access to an extensive collection of references to the world's nuclear literature. It was designed as an international cooperative venture, requiring the active participation of its members. While it started with only 25 members, today there are 153 (129 countries and 24 international organizations). INIS also represents the world's first truly international computerized information system. Under the INIS concept, each participating member undertakes to look through literature published within its boundaries and select those documents that fall within the agreed subject scope. The countries prepare a detailed description of each item selected and send it, in some cases together with a copy of the document, to the INIS Secretariat in Vienna. Here, the incoming information is checked and combined with input from other countries into a single database collection.

INIS is a channel for information exchange that employs the very latest technology, thus, proving over the decades to be instrumental in bringing cutting edge technology to countries or geographical areas which lack such facilities or infrastructures. It is also the tool used by scientists, engineers, technicians, and managers in the nuclear industry to keep abreast of developments in the subject areas covered by the INIS Collection. From the perspective of 'information management and preservation,' INIS is the repository for references to publications that contain cumulative scientific knowledge in the areas of peaceful applications of nuclear science and technology as recorded in scientific journals, as well as the repository for the full texts of non-conventional literature (NCL), also known as 'grey literature,' not produced and controlled by commercial publishing channels (Source: www.iaea.org/inis).

"INIS represents an extraordinary example of world cooperation, where 153 members give access to their valuable nuclear information resources in order to preserve world peace and further increase the use of nuclear energy for peaceful purposes. Not only are more than 3.7 million bibliographic references to publications, documents, technical reports, non-copyrighted documentation, and other grey literature accessible, but 483,000 full texts are also available. Overall, there are 700 GB of data in the INIS Collection. Besides being a source of information when searching, the availability of full-text gives INIS a special role — being the main custodian of this world information heritage and preserving this codified, specialized, scientific and technical knowledge" (Savic, 2014).

On average, INIS adds 120,000 bibliographic records and 13,000 full-text PDF documents to its collection annually. The complete collection is freely accessible from the INIS Search website.

The INIS Collection covers around 50 well defined subject categories, which are regularly maintained by INIS and The Energy Technology Data Exchange (ETDE). They also provide the scope descriptions used by national and regional centres to categorize nuclear literature for INIS input, and to categorize energy technology literature for ETDE input. The ETDE/INIS Joint Reference Series publications are also available on the INIS website (Source: www.iaea.org/inis).

The INIS Collection covers all aspects of the peaceful uses of nuclear science and technology such as nuclear reactors; reactor safety; nuclear fusion; application of radiation and radioisotopes in medicine, agriculture, industry and pest control, as well as related fields of nuclear chemistry; nuclear physics; and materials science. Special emphasis is placed on the environmental, economic and health effects of nuclear energy. Legal and social aspects associated with nuclear energy are also covered (Source: www.iaea.org/inis).

Many things have changed during the last 44 years, while INIS has primarily remained unchanged. Some automation of internal processes did take place, but strategic repositioning was necessary to successfully cope with new challenges and to secure its sustainability.

Opening the collection to all Web users, giving them free and unrestricted access, was the biggest change since the creation of INIS. “On 3 April 2009, INIS announced that access to its database was open to all Internet users around the world. Free, open and unrestricted access was made available from the INIS Homepage. There was also a special INIS database start-up webpage created to make bookmarking more efficient. Opening the database provided easy access to reliable nuclear information on the peaceful uses of nuclear science and technology, including non-conventional literature, and made nuclear knowledge readily available worldwide. The importance of making information from INIS more easily accessible was recognized, especially as more countries continued to express interest in using nuclear power. There was an obvious need for reliable and trustworthy sources of information on nuclear energy, and the information offered by INIS comes from reliable sources, such as the national atomic energy authorities in member states” WWS (Savic, 2014). Simultaneously, the inclusion of INIS in the World Wide Science (WWS) website¹⁸ improved visibility and therefore, usage of INIS. It has become one of the resources searched within WWS.

Launching worldwide free on-line access to the INIS database and linking it to WWS, not only greatly increased the visibility of INIS, but its usage was augmented by a factor of 10, going from 7,000 hits in April 2009 to 70,000 in December 2009. Removing the barriers to access and opening INIS on the Web proved to be a landmark in positioning INIS as a key provider of information on the peaceful uses of nuclear science and technology.

¹⁸ <http://worldwidescience.org/>

Opening the INIS database was soon followed by a complete change of IT legacy systems, including the outdated database retrieval system previously used. An enterprise-wide Google Search Appliance (GSA) was purchased and successfully deployed in June 2011, giving a Google-look to querying the collection, already known to most Web users, indexing available full-texts of documents, and providing unparalleled speed and flexibility.

The new INIS Collection Search (ICS), a new name given to the INIS database, increased the speed of searching and downloading, and supported multilingual queries, as well as the standard search interface. It also introduced a new advanced search feature with the following key benefits:

- Metadata field search by abstract, author, country, descriptors, language and title;
- Boolean search using OR/AND/NOT operators;
- Dynamic management of complex queries enabling users to build and manage them easily by adding or removing conditions dynamically;
- Integration with other systems through an external INIS widget.

From its introduction in 2011, the ICS has gone through a number of changes. Its current version, 4.3 was implemented in January 2014. The system is hosted internally on virtual servers within the IAEA and is constantly monitored for 24/7 availability. The INIS Collection Search, which in fact, is the INIS On-line Public Access Catalogue (OPAC), includes the following main features:

- | | |
|-------------------|-------------------|
| - Ease of use | - Authority files |
| - Advanced search | - Usability |
| - Faceted search | - User profiling |
| - Expandability | - Help |
| - Multilingualism | |

One of the major benefits of using GSA for the INIS Collection Search is its expandability. The possibility to include other nuclear information repositories available within the IAEA gave additional value to INIS and ensured its future sustainability. In the beginning, ICS searched only the INIS collection of bibliographic records and full texts. However, it was soon realised that the inclusion of the IAEA Library Catalogue, with its 90,000 records, would also be beneficial for our users. “After the integration of the bibliographic records from the IAEA Library catalogue into the INIS Collection Search, information from the IAEA Meetings on Atomic Energy (MoAE) database, maintained by the IAEA Nuclear Knowledge Management Section, was also added (Source: www.iaea.org/inis). The most recent addition was the NUCLEUS database, which provides access to over 130 IAEA scientific, technical and regulatory resources. This includes databases, document repositories, websites, applications, publications, safety standards, training materials, and more” (Source: <http://nucleus.iaea.org/Home/index.html>).

Current ICS implementation includes full-text PDF documents, bibliographic records, and INIS and PDF metadata. However, the types of documents, as well as their numbers could be expanded. The most obvious expansion is the inclusion of various audio-visual formats, PowerPoint, Word and Excel files, which are not part of the presently deployed application.

In February 2014, after much preparation, the INIS Collection became searchable through Google.com and Google Scholar. Initially, only publically accessible full-text INIS PDF publications were indexed and made available. The bibliographic records of the INIS Collection are being slowly added and indexed by Google and Google Scholar as well.

The impact of this inclusion on the traffic of the INIS Collection Search (ICS) was far greater than expected. As Figure 11 indicates, ICS statistics for January 2014 show, in comparison to January 2013, a 15-fold increase in total traffic (number of visits), and a 23-fold increase in the number of unique visitors. Besides that, in January 2013 there were 2,618 PDF downloads, out of which 1,771 were unique documents, the most popular of which was downloaded 15 times. In January 2014, there were 43,533 downloads (almost 17 times higher), with 20,560 unique document downloads, the most popular of which was downloaded 79 times.



Figure 8: Comparative statistics for INIS search

Figure 12 below shows the way INIS records are displayed in Google.com. If Google recognizes that the search text is included in scholarly articles, links to Google Scholar will appear at the top. Below this, links to the full-text of the records are displayed. When a user clicks on such a link, they are taken to the ICS bibliographic record page. From there, the user can click on the title and download the full-text PDF.

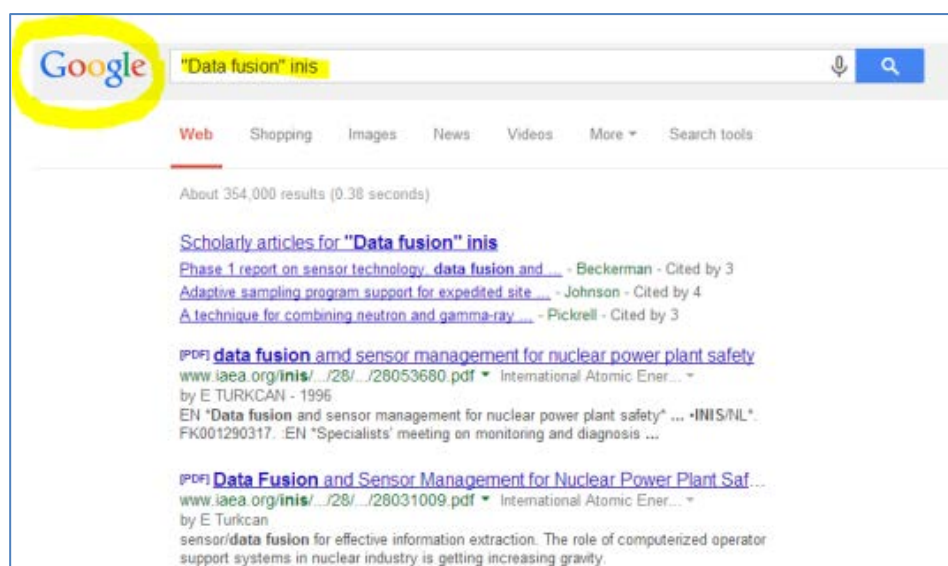


Figure 9: Google.com display of INIS records

Similarly, Figure 13 shows the way INIS records are displayed in Google Scholar, including some additional functions, such as: cited by; related articles; number of versions available; possibility to cite the publication in MLA, APA and Chicago formats; import into different formats; save into Google Scholar Library, and view the document as HTML.

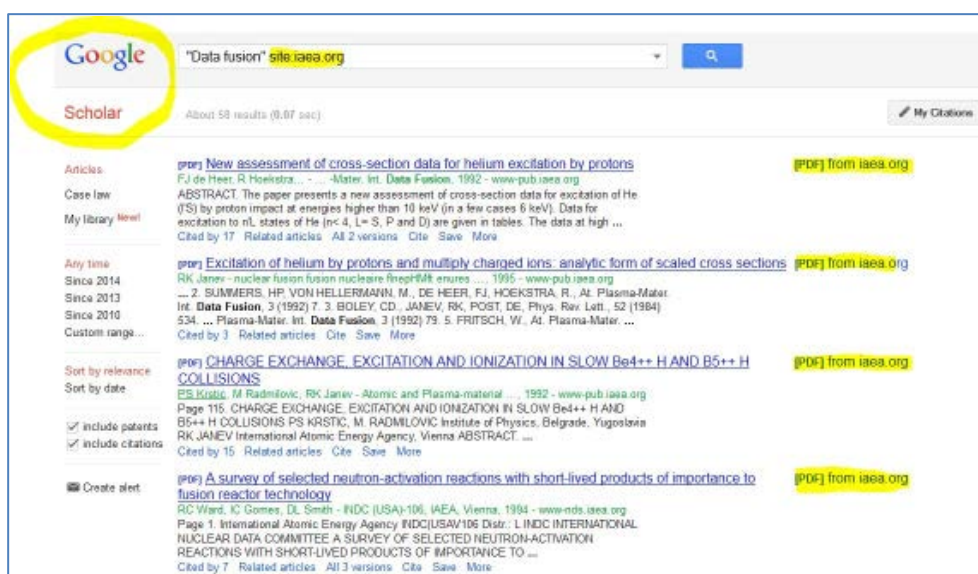


Figure 10: Google Scholar display of INIS records

The inclusion of the INIS Collection in Google.com represents a remarkable achievement in the 45-year history of INIS, and is a huge step in making our collection of nuclear related publications more accessible to our users.

B. My role

Changing an international information system with a number of stakeholders is a complex, time consuming endeavour requiring considerable effort. As Head of the Nuclear

Information Section and the International Nuclear Information System (INIS), my job was to successfully get the players to accept and support the proposed changes, secure sufficient financial and other resources, develop, implement and internationally test all the changes. Luckily, tremendous support came from the IAEA team involved in the project. With over 20 people working towards the same goal, my project management and leadership skills were essential.

The second most important factors leading to the success of the project, besides management and negotiation skills, were creativity and innovation. These encompass each aspect of our work and our lives. In management, it involves different ways of motivating and leading project staff; in finance, finding ways to cover or avoid some of the costs; and in design, selecting the proper balance of features, their distribution, and ease of use. Creativity and innovation can also involve mundane tasks such as record storage and sharing, as well as more complex ones like redistribution of work load, responsibilities and time scheduling. Overall they depend on the input of everyone involved, but, most importantly, the leader. Without his or her support and openness to new and creative ideas most projects cannot succeed.

My leader creativity was most evident in the decision to choose GSA to replace the INIS database search. Although very powerful for searching large amounts of full-text documents and publications, GSA was not usually used for structured data such as library catalogues with strict metadata schemes. Choosing GSA was a risk. Most of the literature at that time, e.g. Gibson, Goddard and Gordon (2009) and Miller and Pellen (2005), was dealing with the use of Google Search Appliance (GSA) for federated searches. Other researchers even believed that GSA did not provide any significant advantage over conventional databases and their query capabilities (Oberg et al., 2008). Fortunately, GSA use by INIS met with success, which was demonstrated by an enormous increase in INIS Collection searches. And, this creative decision further brought out the best in the team, facilitating the resolution of numerous technical issues.

Reflecting on my self-evaluation and lessons learned, I don't think that I would do much differently today than I did then. If anything, the move towards open access and the use of GSA should have been implemented much earlier. This leads me to conclude that bold decisions and introducing change should be made, as soon as possible. Much time is often wasted on superfluous discussion, evaluation and feasibility overviews, rather than concentrating on the problem itself. Creative action needs to be taken as soon as demand and possibility appear. An afterthought, or lesson learned, is the question of sustainability. GSA is a very expensive product with high annual fees, so I have initiated a search for a new tool, preferably open source, which can replace the existing back engine. One such tool has already been identified and tested. The initial results are very promising. If successful, the current application will be re-engineered and adopted for use by a less expensive and, therefore, more sustainable tool.

C. Public impact

By giving free, open and unrestricted access to the INIS Collection, the number of visits, visitors and pageviews dramatically increased. Currently, there are over 310,000 pageviews performed monthly, 140,000 visits and over 110,000 unique visitors. There are also over 44,000 document downloads performed monthly. The public now has open access to an important collection of documents on the peaceful use of nuclear energy, and is able to search it using a top of the line search engine making the information discovery process fast and easy (Savic, 2014).

Much praise was received from external users, as well as from higher level management within the IAEA. Appreciation of that was shown through the Merit Award that I received in March 2013¹⁹.

D. Evidence

The best evidence of the public impact are the statistical reports that are systematically collected using the built in Google Analytics tool. These reports are regularly shared with INIS member states. Another valuable source of information and evidence are INIS Progress and Activity Reports. The reports, from 1996 – 2013, are available on the INIS website²⁰. Other such sources are, the Consultative Meetings of INIS Liaison Officers²¹, INIS Newsletters²², and INIS Highlights²³.

A list of other resources that demonstrate the value of this particular work done for INIS and the IAEA is available in Appendix 1: Evidence of Public Works.

3.5 Professional learning and personal development

Based on the above descriptions of each of the public works, their role, public impact and evidence, this part critically explores the accumulated learning links between each of the works, reflecting the development of my knowledge and my role as a professional practitioner. However, it starts with a review of practical paths which had to be negotiated in the context of my work and its operationalization. Each public work is analysed here through the initial need which triggered the subsequent actions, challenges faced, and the opportunities which played an important role and which were used to bring a solution to the initial need.

¹⁹ See Appendix 4: List of Merit Certificates and other Awards

²⁰ <http://www.iaea.org/inis/about-us/activities/index.html>

²¹ <http://www.iaea.org/inis/events/index.html>

²² <http://www.iaea.org/inis/products-services/newsletter/index.html>

²³ <http://www.iaea.org/inis/highlights/index.html>

Public work	Need	Challenge	Opportunity	Solution
YU Institute	Access to international cooperation agreements by YU Government, embassies, universities, cultural organizations, etc.	Agreements disbursed, maintained by different entities, hard to find, segmented	Working in the library/archives which hosted many of those agreements; Free hand to search and request copies	Organize a paper-based collection and turn it into a set of monographs; Make it available free of charge to worldwide users
DDC	Access to an organized collection of Sierra Leone development documents; Improve information resources used for national economic planning	No previous country experience, practice or organizational units responsible for documentation; Country development estimates prepared manually	Financial support by UNDP; Government willingness to make some investments (space and access); Appearance of first PC (IBM) and first laptop (Toshiba) important because of power supply problems	Organize a modern documentation centre with solid document collection and use UNESCO CDS-ISIS software for the catalogue; Introduce Lotus 1-2-3 spread sheet software for first computer generated national development estimates
ICAO	Need for more efficient dissemination of information to member states and the public; Revenue generation	Funds not available; No external expertise; Resistance to change; Interdepartmental competition/jealousy	Use newly available technology such as Internet, Web and CDs; Learn something new; Improve position of my own department	Develop and launch first ICAO public website, first ICAO Members' website, first commercial CD and first ICAO e-commerce website
INIS	Provide access to INIS collection to wider group of users; Increase use of the collection; Simplify existing work processes; Sluggish system	40-year long tradition; Some internal resistance; Hesitation of some external users and member states; Interdepartmental competition/jealousy	Widespread use of Internet; Google search engine popularity; Funds availability; Strong IT support team	Opening of the INIS collection to the general public; Removal of any user pre-registration requirements; Replacement of the legacy system with Google Search Appliance

Figure 11: Public works operational analysis

It should be mentioned that all four public works were very positively perceived by the final users and the audiences. The solutions were welcomed by almost all, especially in the long run, and they made a significant difference in their respective fields. A substantial List of Merit Certificates and other Awards given in Appendix 5, confirms this.

Regarding accumulated learning links between each of the works that reflect the development of my knowledge and my role as a professional practitioner, the analysis starts from each of the individual public works and culminates with a cross-cut and a set of accomplished outcomes.

A. Federal Institute for International Cooperation

Creativity and innovation based on inspiration and the willingness to introduce change present themselves. This was true for the era before computers and it is even more so today with the almost unlimited possibilities offered to us by modern information and

communication technology. Processing speed, unlimited storage, reasonable costs, and global access are just some of the opportunities available to all of us, and particularly to information managers.

This was literally the very beginning of an information technology and information management quantum leap with many quick and dramatic changes to follow, making the work of professionals in this area very interesting and challenging. I quickly realized a tremendous potential in using available IT technology to improve and change the practice of information management. Also, I realised that information specialists need to become leaders in the wider use of new technology. Instead of being followers, librarians, information specialists and knowledge managers should be protagonists, the ones driving change by boldly adopting new IT and other technologies - using them to find solutions to problems inherited in their fields of work.

This particular public work – a set of two monographs – also had a lasting impact on my orientation regarding stakeholders (customers and users). Keeping in mind the needs and requirements of information stakeholders became for me a necessity. This should be a prevailing guideline in all that we do. Once fully identified and understood, information needs can be met by cleverly designed information services or products which bring satisfaction to both information users and information producers/organizers.

However, it should be noted that because it is not easy to understand and identify information needs; it is often difficult to design a proper information service or product. Although studies of information needs are probably one of the most studied areas of information science with several thousand published papers (Wilson, 1994) since its first appearance in 1965 (Fishenden, 1965) – there is still not much agreement on its definition or scope. A well-known diagram by Wilson (1981) shows the complexity in the field of involving the ‘information user’, who in response to some perceived ‘need’ engages in information seeking behaviour, searches for information resources, uses available information systems, satisfies his/her specific need, and possibly engages later in the transfer or exchange of information. Wilson later slightly amended his model of the information seeking process to include satisfaction of affective (or emotional) needs, rather than only cognitive needs.

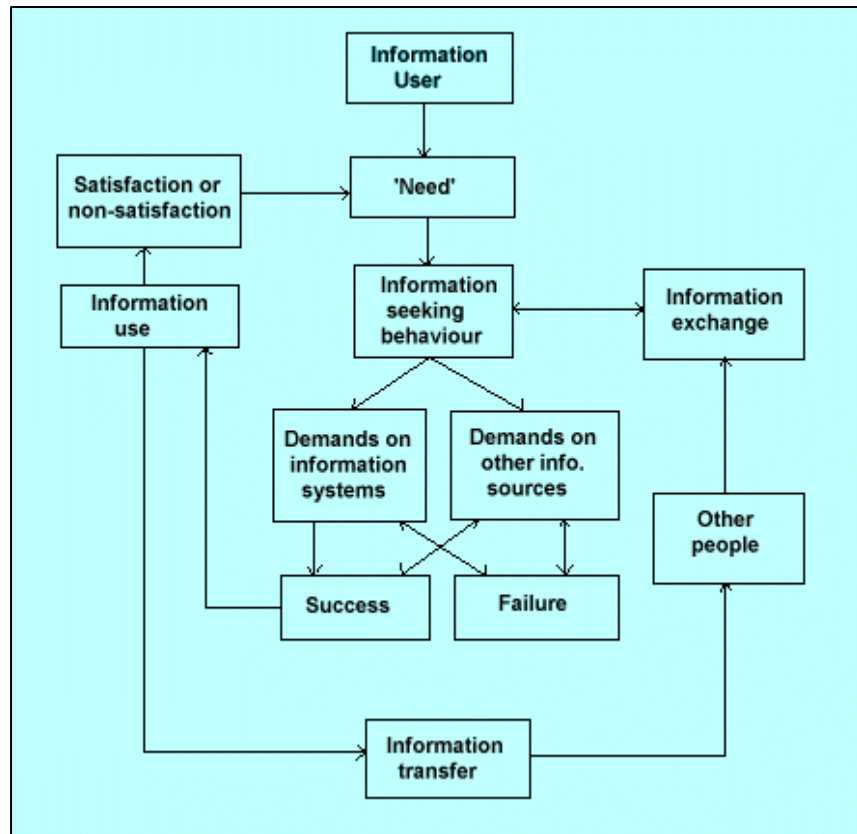


Figure 12: The information behaviour field

One of the major things I learned at this formative stage of my future work in the area of information management was the realization that analysing and assessing the information needs of patrons are keys to the provision of effective products and services offered by libraries, documentation and information centres. In many ways this became a guiding principle in leading change in all of my assignments that followed. Creativity and innovation has to directly meet needs of our information users, otherwise the service or the product would become a goal to itself.

B. Development Documentation Centre

Working and living in Sub-Saharan Africa is an experience which I will always remember and cherish. Very challenging living conditions often bring out the best in people – the power of teams, mutual co-dependence; the joy of making progress and introducing changes, and improving people’s living and working conditions. Experiencing first hand a “viral phenomenon”,²⁴ where government ministries compete in copying each other and

²⁴ *Viral phenomena* are objects or patterns able to replicate themselves or convert other objects into copies of themselves when these objects are exposed to them. They get their name from the way that viruses propagate. This has become a common way to describe how thoughts, information, and trends move into and through a human population. http://en.wikipedia.org/wiki/Viral_phenomenon

creating their own information and documentation centres, was an eye opener for me, illustrating the power of positive examples.

The powerful impact of this positive example²⁵ - the successful establishment of a fully operational documentation centre - became manifest. The impact spread from the Ministry of National Development and Economic Planning to the Ministry of Agriculture, to the Ministry of Foreign Affairs and the Ministry of Labour. My personal realization of how powerful this impact had on others was, in fact, surprising. It proved to me that the best way to convince someone to do something different or try something new is by demonstrating it in practice and by presenting a case or an example that already works.

Bewley and Roberts (2012) observe that the highest impact of information management occurs when activities are organized in such a way as to:

- Deliver some quick wins
- Identify key themes/flagship projects
- Improve how to share lessons learned, and
- Draw on the thinking power of the whole team

My work philosophy changed in such a way that my future projects or ideas were always presented as works-in-progress, or if feasible, as completed products or services, thereby directly demonstrating the benefits - making objections and refusals much more difficult.

The utmost respect for cultural differences and specific local customs was another lesson that I learned while working in Africa. All of us who have had the opportunity to work in different parts of the globe have been confronted with cultural differences at some point in time. They can often lead to amusing misunderstandings, but can also have a serious impact on our work.

With all these lessons learned comes also the question of what I would do differently if I had the chance to do it over again. Two main issues come to mind. One is of a general nature, while the other is quite specific to the situation regarding the Development Documentation Centre in Sierra Leone.

The first one, of a more general nature, regards project sustainability - particularly the sustainability of development projects. The United Nations, as well as many other international government, non-government, and even commercial agencies involved in donor activities, is faced with the problem of how to secure sustainability of their projects and their investments. There are no ready-made or widely accepted solutions or recipes. The one I would introduce, and that would have been different to the approach used in establishing the DDC, would be the diversity of funding resources. The whole project was

²⁵ Each of us is inspired far more by the power of positive example than by command or threats (Reed, 2013).

funded solely by UNDP and executed by UNESCO, while probably a more sustainable approach, and in the long term, would have been the involvement of other donor agencies. Due to the fact that a civil war started soon after I left, this might not have had long-lasting significance, but in general, I believe it would have been a better approach.

The second thing that I would have done differently would be to combine efforts and create a single national documentation centre, instead of creating 4-5 individual centres around different Government Ministries. The importance of this change lies in the simple truth that a single larger documentation and information centre would have better chances for survival. Its sustainability would be improved. It would be easier and cheaper to maintain, and, due to the relative compact nature of Freetown, it would be able to offer uninterrupted services to the same group of users. One large national centre would have been in a better position to obtain additional financial support from potential donors. Further improvements through other follow-up projects would also have been easier to achieve.

C. ICAO

By the time I took my post at ICAO, I had already fine-tuned my *modus operandi* as a professional in the field of information management and as a leader in introducing change to organisations. By the time I left the organisation I learned that:

- A gradual approach to introducing change brings more certain results than large projects involving many players, of long duration, and huge financial resources;
- The Web is the main media for communication with the rest of the world, so all activities and outcomes should be properly presented on the Web. If it is not on the Web, it does not exist;
- Creativity and innovation have to be followed by long and sustainable action as the only way to their final realization;
- Finding a champion²⁶ within upper level management to support and promote your cause is of utmost importance;
- Because of the many factors impacting the work of an international public organization, long-term planning is very difficult. Mid-term planning gives much better results.

This was the most productive and intense learning period of my career, reaping good results and much success. The availability of Internet based technologies became the main focus of attention to all information managers. However, this period also brought to the

²⁶ "Champions are probably the most influential factor in creating a synergistic relationship that achieves a mighty purpose... Champions cannot command because their authority is not positional. Their authority comes from their vision, their energy, and their ability to touch the hearts of those who believe their vision is the reality the organization must achieve" (Lynch, 2001).

surface our preoccupation with technology - how to use some of these new tools available, how to modify them to our needs, and how to adopt our work to them. The period that followed still focused strongly on technology, but other elements became even more important. From a preoccupation with hardware, information managers moved to softer ground, focussing on issues dealing with intellectual rights, open access and the open source movement, including access to information assets rather than ownership. It was within these larger trends that I conceptualised the work in my next organisation, INIS.

D. INIS

The last seven years spent working at the IAEA have been very dynamic and the learning very intensive. I worked in an environment where changes happened one after another at almost atomic speed. There was a short period of adaptation as I learned new responsibilities, and a new style of management that is characteristic for the IAEA. Secondly, a number of my immediate supervisors changed in a short period of time, which refocused efforts from changing the work processes to learning how to deal with different management expectations. The Department of Nuclear Energy, as well as my Nuclear Information Section (NIS), went through some major structural changes which further postponed some foreseen and required developments regarding work processes and information technology used. At the same time, almost all of the IT tools previously used had to be replaced and new ones introduced. This required a high level of professional work from my team and extra efforts from each and every team member. Meanwhile, I had to make some strategic decisions and take quick actions, like the ones mentioned at the beginning of the Context Statement. Still, I had an amazing time with lots of opportunities for introducing change, for creative thinking and innovative action. I was required to grasp substantial amounts of new knowledge on the fly and to try to have it immediately implemented. However, the results were very rewarding. By successfully repositioning INIS and its Collection Search to an open resource I brought the satisfaction to many stakeholders, and to myself, I brought a feeling of great personal fulfilment and contentment.

E. Accumulated learning

My learning progressed incrementally as the result of each one of the public works. Each one of them made a special contribution to my list of professional learning and ethos and prepared me for the challenges which were to come with the next project and assignment. A major influence on my professional life and development was the realization of the tremendous power of creativity and innovation that each information professional could individually contribute and should exercise in order to bring about

change and improve the environment in which he or she is working in order to meet the needs of information users. Innovation, creativity and a constant drive for change became the main guidelines in my professional life. However, there were other very significant learning outcomes for me. In a summary, as illustrated in a table of individual learning experiences related to each public work, as well as the accumulated ones, they include:

Public work	Learning	Accumulated learning
Federal Institute for International Cooperation	<ul style="list-style-type: none"> • Initiative • Importance of computers • IT - tool for changing IM • Information specialist to be IT protagonists • Users – focus of attention • Reliance on creativity and innovation • Even small efforts can make a big difference 	<ul style="list-style-type: none"> • Initiative • Responsibility • Learning • Constant change • Leadership • Role of information Technology • Internet/Web • Teamwork • Stable financing • Quality work • Open access • Management support
Development Documentation Centre	<ul style="list-style-type: none"> • Power of teams • Responsibility • Mutual co-dependence • The joy of successful change • The power of working/positive examples • Constant learning • Share lessons learned • Importance of high-level professional work • Respect for cultural differences • Importance of sustainability 	
ICAO	<ul style="list-style-type: none"> • Gradual change • Internet will completely change IM • Web is the main communication tool • Medium-term planning gives the best results • Role of champion • Importance of high-level support 	
INIS	<ul style="list-style-type: none"> • Power of teams • Open access • Strategic leadership • Importance of constant change • Quality personal • Financial resources 	

Figure 13: Public works and learning outcomes

The above elements identified as my accumulated learning, once put in a more general and systematic order and presented as a set of guidelines, could be used by other information professionals for their own career development. Three major groups of identified success factors are:

- **Intrinsic factors**
(Learning, responsibility, leadership, initiative, quality work)
- **Organizational factors**
(Teamwork, management support, financing)
- **Global factors**
(Constant change, role of IT, Internet/Web, open access)

The most important personal insights from the review of my public works, and something that I would like to share with other information professionals as my contribution to their success, could be summarized in these three sets of factors. They are based on my personal life-long professional experience, but I believe they have a wider potential value for people starting out in their careers.

The above factors commence with my own personal actions and views followed by factors from the immediate surroundings, such as the organization I worked for, and conclude with my global working environment influenced by many social and technological trends and current developments.

Each of these sets play a very important role in our working lives, but based on my experience and understanding the most important one for my personal and professional growth is probably my personal stance on learning and development, the way I assumed responsibility, initiatives I took in my leadership role, and the way I performed my daily tasks. Without these critical personal attributes, my professional success and personal realizations would not have been achieved. Organizational and global factors are more or less the same for all of us, but the tipping point of success lies in one's own behaviour and the understanding of the power we have to change the world around us. Some of us unfortunately miss our chance to learn more, take greater responsibility, improve the quality of our work, and go that extra mile. Both organizational and global factors demanded from me maximum efforts to constantly improve my professional skills and my personal development.

Information management constantly undergoes change, especially due to the tremendous development in IT capabilities, the fast spread of the Internet and the drive towards openness (open access, open science, open source, etc.). In order to benefit from this fast development, I had to have my skills properly tuned and developed; best revealed through my ability to work in teams, gain the trust and support of management, and attain new heights. The above set of learning outcomes can also be viewed as a sign-post leading towards a holistic professional who has his or her hard and soft skills perfectly attuned to derive maximum benefits from the world of technological developments and who can successfully implement them in his or her immediate working and living environments.

My personal *modus operandi*, personal working system and habits could be best described in the following manner:

Modus Operandi	
Goal	<ul style="list-style-type: none"> - Help organize the world's scientific and technical information and make it universally accessible - Scientific and economic progress through information sharing
Objective	<ul style="list-style-type: none"> - Information management at its best - Improvement through constant change - High efficiency and effectiveness
Performance	<ul style="list-style-type: none"> - Leadership and responsibility - High quality professional work - Initiative, innovation and creativity - Teamwork and cooperation - Integrity and respect for others - Constant learning

Figure 14: Modus Operandi

If there is another major aspect to select as a part of my personal realization, besides innovation and creativity, which have already been mentioned, it would be the importance of strategic leadership. It is not strategic planning that plays a crucial role; it is strategic leadership that provides the vision and direction for the growth and success of an organization. It is important to provide a sense of direction when applying creativity and implementing innovation, while successfully introducing and coping with change. Of course, this all needs to be done in cooperation with colleagues and the immediate team, maintaining respect and integrity. Learning, which is a fundamental building block of any professional or personal gain, needs to be rigorously encouraged.

Looking back at the Four Quadrants of the Conscious Change Leader Accountability Model, elaborated on page 5, a review of my own experiences with change management within the environments of particular public works might shed some extra light on the link between change management in theory and its application in practice. Having this goal in mind, a slightly more detailed model is presented below.

I N T E R N A L	INDIVIDUAL		E X T E R N A L
	Mindset Attitude; Ethics (personal values & beliefs); Emotions; Justice; Optimism; Continuous learning and self-improvement; Creativity & innovation;	Behaviour Honesty; Friendliness; Listening; Commitment; Longer working hours; Trust; Anger control; Solution orientation; Emotional intelligence;	
	Culture Organizational culture; Openness to change; Respect of cultural and other differences; No public criticism; Team work;	Systems Adoption of new information technologies & new solutions; Improvement of business processes; Redesign of old structures	
	COLLECTIVE		

Figure 15: Detailed four quadrants of conscious change leadership

The ***mindset quadrant*** is the most intimate (internal) and very personal (individual) set of personal characteristics. As indicated in the above Figure, it covers such characteristics as attitude, ethics (personal values and beliefs), emotions, justice, optimism, continuous learning and self-improvement, creativity and innovation. Continuous learning and self-development/improvements is, in my opinion, probably the strongest and most evident characteristic in this group. My attitude towards learning was always that it is not a destination, a goal to be achieved; it is a never ending process. A number of my diplomas and certificates attest to that. We need to find time and energy every day to learn something new. As wisely expressed by Leonardo da Vinci - Learning never exhausts the mind! This desire to acquire new knowledge is directly related to the creativity and innovation which I attempted to promote throughout my professional career.

The ***behaviour quadrant*** includes work style, social skills, commitment, and characteristics such as honesty and friendliness. During the public works mentioned here, as well as during my work in general, my focus was always on the solution rather than the problem.

In my view, problems were a challenge which could be resolved with hard work, wisdom, and focus. This strategy succeeded in even the most physically difficult conditions, such as my work on a development project in Sierra Leone, as well as emotionally difficult situations, such as lack of support from my IT colleagues in ICAO. The importance of refined emotional intelligence skills in the work place is well-known, supported by significant research and many studies. Its importance in every day office work was always

high on my list of behavioural traits to observe. Having led and participated in many job interview panels at the IAEA, I was able to emphasize the importance of looking for a person with good social skills who would fit in well with our team. Emotional intelligence is very difficult to learn or change, while technical skills, although very important, can be learned.

The ***culture quadrant*** includes norms and collective ways of working and relating to co-workers, bosses and colleagues. Working for the United Nations assumes utmost respect for multiculturalism and diversity, gender equality and multilingualism. The IAEA has more than 2200 staff members from more than 90 countries with expertise in a variety of scientific, technical, managerial and professional disciplines. In terms of language skills, IAEA staff is typically multi-lingual. IAEA business is usually conducted in English, but knowledge of other official languages (Arabic, Chinese, French, Russian, or Spanish) is an advantage. At the IAEA headquarters in Vienna, knowledge of German is an additional asset, both for professional contacts and for life outside the office.

The ***systems quadrant*** includes adoption of new information technologies and new solutions, improvement of business processes, as well as redesign of old structures. This is the most external and collective set of activities which was extensively present in all of my public works. It was evident from the introduction of personal computers in the Sierra Leone Ministry of National Development and Economic Planning, the creation of the first CD-ROMs in ICAO, the launching of the first UN-based website, and finally, to the use of Google-based technology in INIS to improve the search experience and open the document collection to the general public.

Finally, it is important to mention that leading change in information management is not simply about organizational systems or culture. All of these quadrants and their characteristic activities must be taken into consideration and applied in harmony. Synergetic effect, such as creating and launching a first website within the United Nation, can be achieved only if continuous learning (mindeset), is combined with commitment and hard work (behaviour), team work (culture), and early adoption of new information technology (system).

4. Thematic Review

My previously elaborated public works also deserve a thematic review which puts them in a different perspective. The four themes discussed here are, in fact, not only characteristic of my work, but also of the information management domain during the last thirty years. They are directly related to the previous descriptions of my public works and their analyses.

The themes covered here include the constant change in the information management world, the global impact of information, the democratization of scientific and technical information, and information ethics.

4.1 The changing world of information management

First and foremost, this theme deals with the constantly changing nature of work in the field of information. This change is propelled by the introduction and quick acceptance of modern information and communication technology tools. Computers and the Internet have changed the way we work and the way we deliver products and services. New technology in the areas of networking, file storage, and social media has brought new changes to library automation. These changes have impacted on-line/remote access to library information and services, transitioning from paper to electronic formats, an increase in the number of available information resources, higher granularity of information and access to raw data, as well as the diminishing role of intermediaries. These changes are all present in my previous public work, where the initial emphasis was placed on paper-based services, followed by CD-ROMs, remote and on-line access, and, finally, a complete switch to a complex global system of information collection, processing and dissemination.

Many changes have been made in the area of information management during the last three decades. The magnitude of these changes is really impressive, but there is one underlying factor that caused these changes to take place, and that factor is technology. Namely, it is information and communication technology which literally revolutionized the world in almost all aspects, from the appearance of the first personal computers to the introduction of the Internet and Web technology. Information management is one of the areas that was impacted the most.

According to my experience, there are three main changes that have happened during the last three decades. They are changes in collection format, changes in delivery and access to services, and changes in user expectations.

For many years, library and information collections were full of paper-based books, documents, journals, and printed materials. Even the library catalogues and information lists and directories were paper based. Within a very short time, much of that became

electronic. First to go were the thousands of cataloguing cards, together with their outdated wooden cabinets. At the same time, or slightly later, a change came about in format used for the production of directories. Voluminous directories of all kinds, prepared and printed periodically, usually on an annual basis, were replaced with their electronic versions on the much cheaper medium of CD-ROM. Encyclopaedias and dictionaries followed suit, but were very quickly moved from CD-ROMs to on-line websites. Paper dictionaries had a similar destiny. The Oxford English Dictionary paper format was discontinued in 2010. The MacMillan English Dictionary and Thesaurus also moved exclusively to the Web in 2012.

The impact of electronic publishing (e-publishing) on library collections, services and information management is complex. Libraries and other information providers were presented with a series of challenges. Electronic publishing and the use of full-text databases accessible via the Internet also changed the rules by which libraries operate. From the acquisition of tangible publications, libraries today subscribe to an internet access-point at the publisher's or distributor's database.

Libraries are in the middle of a move *from having collections to having connections!* This move is not yet fully completed. Printed journals and books can still be acquired. However, the end of this period is in sight. With the development of reading devices to download electronic books, we are approaching the end of the Gutenberg era. (Maiello, Bainton and Bonnet, 2012)

This development has had a significant impact on delivery and access to the information services offered. The electronic nature of information resources, and the availability of quick and cheap Internet based communication channels, requires almost a complete redesign of our products and services. They need to be geared towards on-line users, their changed expectations, and their technical devices, such as mobile phones, tablets and e-readers.

Today, information users have different requirements. They want information to be directly relevant to their search and their specific needs. In the ocean of available information, trustworthiness and source are of utmost importance. And finally, today's concern is not the quantity of information, but rather the quality of the information.

For example, when searching IAEA's International Nuclear Information System, one directly searches a highly specialized set of over 3.7 million academic and technical publications and documents - so the relevance is very high. Searching the INIS Collection eliminates the information noise generated by using search engines, such as Google. In contrast to searching the Web, INIS provides access to trusted and hand-picked quality information which has been processed by national INIS liaison officers for the last forty-some years. And, this is very important to the field of nuclear energy.

4.2 Global impact of information

The second theme refers to globalisation, or more specifically to the global impact of information. Localized information has suddenly become a global commodity. Today, with a simple click of a button, information reaches almost every corner of the world. This changes the “rules of the game” previously known to information managers. Opening access to information was evident in all four of the works previously mentioned. My work in Yugoslavia and Sierra Leone resulted in better national access to information, while my work at ICAO and the IAEA is a direct creative contribution to information and knowledge globalisation.

Advancements in information and communication technologies (ICTs)²⁷ have been a major enabling tool behind many aspects of globalisation. The main advancements in ICTs include:

- The rise of the *personal computer*, which allow creators and innovators to author their own digital contents;
- The invention of the *Internet* and, in particular, the *World Wide Web* in 1991, which enabled individuals to post information about their creations on a global network, as well as to access other postings around the world;
- The introduction of *communication satellites* and the installation of *fibre-optic cables*, which increased the bandwidth and availability of communication signals almost everywhere around the globe;
- The use of *mobile devices*, which make access to information much more accessible and affordable. Mobile devices present opportunities to leverage and enhance information services.
- *Cloud computing*, a new breed of services offered over the internet, completely changed the way we use the power of computers irrespective of geographic location. It has brought in new avenues for organisations and businesses to offer services using hardware or software or platforms of third party sources, e.g. digital libraries, thus saving on cost and maintenance (Bansode and Pujar, 2012).

In order to better understand the global impact of information, there are also some concepts that need to be explained. One over-arching effect that globalisation has brought upon all of us is “time-space compression”. This means that the time required for the transition of information to any point around the globe has been dramatically

²⁷ICTs are regarded as tools that facilitate communication and the processing and transmission of information and the sharing of knowledge by electronic means. This encompasses the full range of electronic digital and analogue ICTs, from radio and television to telephones (fixed and mobile), computers, and electronic-based media such as digital text, audio-video recording, and the Internet, including Web 2.0 and 3.0, social networking and Web-based communities. McNamara, K. 2007. *Improving Health, Connecting People: The Role of ICTs in the Health Sector of Developing Countries*. infoDev Working Paper No. 1 2007. Washington, DC, infoDev.

shortened to literally a few seconds. Consequently, the distances between various world locations have been reduced. It currently takes much less time to get tasks done than ever before and geographic distance is no longer an obstacle. Another related term, “deterritorialization” (Lawlor, 2007), means that physical locations no longer matter with respect to cultures and people. Different cultures can now communicate and connect with each other from all parts of the world as never before. From a social standpoint, these two factors contribute to the largest and most important effects of globalisation.

Libraries, as well as information and knowledge centres, are critical when it comes to providing information and creating new knowledge, which in turn can alleviate world poverty and deprivation, speed up innovation and changes, as well as increase national and personal development. “As knowledge institutions, they provide spaces for information-sharing, critical for scientific progress” (Haeussler et al., 2014) and learning for people of all ages, genders, ethnic and socioeconomic groups. Libraries provide the means through which knowledge is made available to all, so that no one need be deprived of it in this age of information.

A properly established library, information and knowledge service centre can offer the following benefits to today’s global users:

- Access from multiple locations. Users can consult library holdings from almost anywhere. “Divorcing library services from a physical location provokes a profound change in what is regarded as a library service today” (Fagbola, Veronica and Uzoigwe, 2011);
- Availability of more resources. ICTs enable users to have access to diverse resources i.e. from pure bibliographical records, to full-text documents, as is the case with INIS;
- Access to data. Technology now provides raw information and data, which is becoming increasingly important to those involved in academic research;
- Diminishing roles for intermediaries. There is much less user reliance upon library staff.

The element of global impact related to some of my public works is evident. This is particularly true for those that took place during my tenure with ICAO and the IAEA. Creating a public website for ICAO had an obvious and immediate impact on all of its users around the world. It opened a window to the work of ICAO and to its collection of various regulatory documents in the area of civil aviation, as well as a communication channel between the Office Headquarter and its globally disbursed stakeholders. A similar case was the creation of a commercial website called ICAO eSHOP, which offered a set of relevant and thematically organized ICAO publications for a fee to anyone willing to pay. It was another example of the direct global availability of ICAO documents. While geared towards registered ICAO liaison officers within their national civil aviation administrations

and authorities, the deployment of the ICAO-NET, which gave controlled access to its member states,²⁸ also featured global accessibility.

INIS has two intrinsic global components built into its organizational setup. Firstly, it represents a collaborative effort of its 153 members, mainly countries around the world that are actively collecting, process and contributing their nuclear related documentation to the INIS Collection. Secondly, it is the usage of the INIS Collection, which covers almost 100% of the globe. As Figure 14 shows, there are only 5 countries in the world that had no visitors searching the INIS Collection. These countries are all in Africa (Liberia, Western Sahara, South Sudan, Guinea-Bissau, and the Central African Republic).

Making information a global asset, especially free and open, gives individuals and organizations the opportunity to contribute on a personal, and professional, as well as a local and global level; hopefully, making the world a better place in which to live and work.

Information empowers people by fostering the contributory capacities that can help them improve their own quality of life and that of their families, communities, enterprises and societies – for the betterment of humanity! The role of information managers is to make these information resources readily available to the world.

4.3 The democratisation of scientific and technical information

The next theme is the democratisation of the scientific and technical information. This democratisation would not have been possible without fully realizing the first two thematic processes taking place around the world. Only after computers were made affordable and readily available - in other words once they reached a critical mass and the Internet enabled quick and cheap global access to information resources - did substantial democratisation of scientific and technical information take place and become a reality.

Democratisation, often regarded as part of the Open Access (OA)²⁹ movement, is evident today in many social activities. It has also made impact on the world of STI, but there is still a long way to go. “This is particularly evident in the traditional creation, distribution, access, and use of information. STI still operates in an old paradigm. In particular, free and uninhibited access to STI and to the results of scientific research and technological advancements are necessary for the world to meet current challenges and overcome problems. As Murthy (2013: 6) noted, “libraries are democratic institutions, critical to the

²⁸ On 31 October 2013 ICAO had 191 contracting member states.

²⁹ The term ‘Open Access’ is defined as a free access to scientific information to all Internet users regardless of their country of origin. More specifically, it is a way to share electronic publications understood in terms of a free, comprehensive or partial information model for the public, in which all the costs of access, i.e. the server, website, convert, and others are borne by the publisher (Kinal and Rykiel, 2013).

development of socio-economic wellbeing of any nation. They acquire process and disseminate information in a variety of formats to every citizen in the community where they are located regardless of race, gender, age, etc.” As stated in the UNESCO Public Library Manifesto, “collections and services should not be subject to any form of ideological, political or religious censorship, nor commercial pressure” (UNESCO, 1994).

Globalization and knowledge based economies demand greater access to information (Rahim and Pawanteh, 2011) and put emphasis on finding a faster means for generating knowledge assets such as codified human expertise, research projects, technical evaluations, intellectual discussions, financial data, and health and education reports.

“Hand in hand with an emerging knowledge based economy, came the development of ICT, modern computers, storage and networking capabilities, and, particularly, the Internet. These ICT developments led to the critical tools that made the democratisation of STI technically feasible. Combined with the demands of knowledge workers, ICT developments triggered a radical change in the existing creation, distribution and use of STI. This introduction of increasingly powerful and relatively cheap ICT technologies helped eliminate three previous obstacles from the world of STI. It eliminated physical and geographical barriers, it removed time constraints, and finally, with the introduction of the Web and massive storage facilities, it enabled unprecedented amounts of information to be stored and made available on-line” (Savic, 2013). Hence, knowledge workers, with their new demands for STI that were met by newly emerging ICT possibilities, created an even stronger demand for the democratisation of scientific information.

Although some definitions of OA cover a number of areas³⁰, there are at least three major areas of crucial STI democratisation. These include - information creation; the ways and means for distribution and access; and the conditions for using the information.

“Information creation is the starting point for STI democratisation. Science has closed itself behind walls bearing official titles like professor and official academic degrees, such as Dr, PhD, etc. However, at the same time, valuable scientific and technical research and development is being performed by engineers, technicians, students, amateurs and enthusiasts. In addition, the use of social networking and collaboration tools is not regarded as sufficiently appropriate to scientific environments. The creation of democratised science needs to open its doors to all others who devote their time and energy to these activities. The same applies for publishing the results of such findings. Unless coming from a well-known (Ivy League) college, submissions originating elsewhere are more or less disregarded by leading scientific and technical journals. Open source

³⁰ For example, according to [OpenDefinition.org](https://opendefinition.org/) there are 11 conditions for some work to be regarded as open. They are: access, redistribution, reuse, absence of technological restrictions, attribution, integrity, no discrimination against persons or groups, no discrimination against fields of endeavour, distribution of licence, license must not be specific to a package, and license must not restrict the distribution of other works.

journals are slowly gaining ground, but they have a long way to go. The peer review system established to control the quality of published articles in journals is too rigid for the new opportunities offered via today's web-based comments, blogs and other means of social media" (Savic, 2010).

"Distribution of and access to information is another area with great potential for democratisation. It requires freedom of access to information and world-wide knowledge, particularly for education, and reliable and unbiased sources of information. Greater use of open access journals for publishing purposes, instead of commercial journals, can also make a major impact on the democratisation of distribution and access. The increased use of Web publishing is expected to be a major catalyst for this change. The number of new publishers starting up as open access publishers is increasing. The Public Library of Science is one of the best known examples (www.plos.org). Similar trends are found in the opening of some commercial science databases to the general public through free distribution channels, such as World Wide Science (www.worldwidescience.org), regarded by many as a global science gateway, or the Open Science Directory³¹ with about 13,000 scientific journals" (Savic, 2013).

The third area that needs to undergo major reorganization and democratization are the obstacles and conditions in the use of STI. Current copyrights, patent, licenses, and industry trademark systems are counterproductive and dysfunctional, particularly from the perspective of globalisation and society. Even some creators of various intellectual properties are not always in the most favourable position. A good example is the copyright of a published article which does not remain with the author(s), but gets waived and transferred to the publisher, in which case society at large pays twice. This might be one of the most challenging areas for change and democratization, because it involves some 'fortified privileges and benefits'. New models of software publishing using General Public License (GPL) arrangements are becoming more popular and could be applied in other areas, as well.

From the beginning of its establishment in 1970, INIS kept the democratisation of scientific information at its forefront. INIS membership benefits include: access to a comprehensive and extensive pool of information in nuclear fields; the right of every INIS member to access the relevant nuclear information of all other INIS members; increased access to, and visibility of, a country's national nuclear-related literature; technical cooperation and assistance in establishing and improving National INIS Centres; and help with the transfer of modern information technology and know-how to member states. It is remarkable that these goals and benefits, based on highly democratic values, were introduced from the very beginning of INIS.

³¹ <http://www.opensciencedirectory.net/>

INIS represents an extraordinary example of world cooperation where all members allow access to their valuable nuclear information resources in order to preserve world peace and further increase the use of nuclear energy for peaceful purposes. Not only are bibliographic references to publications, documents, reports and other grey literature made available, but also their corresponding full texts. Besides being a source of information for current searches, the availability of full texts gives INIS a special role: being the main custodian of this world information heritage and preserving this codified specialized scientific and technical knowledge. A further step in the democratisation of INIS took place in 2009, when free, open and unrestricted Internet access to the INIS database was given to Internet users worldwide. This initiative provided easy access to reliable nuclear information on the peaceful uses of nuclear science and technology, including non-conventional literature, thus making nuclear knowledge readily available worldwide.

Another advance in the popularization of INIS and its democratisation was the introduction of a new public distribution channel. Namely, INIS joined the World Wide Science Organization and has also made its database searchable through their Web portal. This sole action doubled the number of INIS database searches, improved its presence in the world of science, and increased its usefulness to the scientific and technical community. The most significant step in the direction of democratization happened when INIS joined Google and Google Scholar.

The future democratisation of STI brings another challenge — going from open access to a fully implemented open data concept. INIS opened its collection to the world, making it freely available over the internet. There are no restrictions imposed on the users, and a complete collection, including the full-text of many documents, is available for easy downloading.

The open data concept³² calls for the further democratisation of information, particularly in the following three areas:

- *Availability and access:* The data must be available as a whole and at a reasonable reproduction cost, preferably by free download over the internet. The data must also be available in a convenient and modifiable form;
- *Reuse and redistribution:* The data must be provided under terms that permit reuse and redistribution including the intermixing with other datasets;
- *Universal participation:* Everyone must be able to use, reuse, and redistribute—there should be no discrimination against fields of endeavour or against persons or groups. For example, “non-commercial” restrictions that would prevent “commercial” use, or restrictions of use for certain purposes, should not be allowed.

³² www.opendefinition.org

Democratisation of scientific and technical information is not a static goal. It is a process whereby information technology and modern information management practices are combined to bring maximum benefits to end users by making the information easily accessible and freely and openly usable.

4.4 Information ethics

My work in information management spanning 35 years, has been constantly impacted by ethical challenges that this field raises and by a strict observance of the ethical code of conducts that regulated my activity.

A. Background

Moral and ethical principles are always given in the form of aspirations or guidelines for daily conduct. Although they might seem to be straight forward and reflect common sense, sometimes their implementation in real life situations can become challenging. All four of my public works elaborated in this statement were produced in the context of ethical dilemmas and concerns.

Some of the relevant issues in information ethics that I confronted throughout my career were raised as early as 1980 (Kostrewski and Oppenheim, 1980). This included information confidentiality, information bias provided to clients or consumers, the quality of data supplied by online vendors, the use of work facilities, etc. There were also some well-known problem areas of librarianship discussed at the time, “such as censorship, privacy, access to information, balance in collection development, copyright, fair use, codes of ethics, and problem patrons” (Hauptman, 1988).

At one point, a distinction between ethical issues associated with print media, such as books and newspapers, and the credibility of electronic reference sources, clearly existed. This was and still is of special concern to librarians. With the appearance of the Web, publishing has become quick and easy, raising the question of the credibility of such electronic materials, quite different from printed publications. For example, assessing and evaluating the credibility, relevance, authenticity and trustworthiness of some Web sites and the information they house became difficult, involving many aspects of ethics.

Today, the question of information ethics has considerably evolved. It has moved from the main concern of ethical issues in librarianship, to broader issues of freedom of information, use of information technology, information in society and the role of information in community development. It has become a multi-faceted phenomenon,

mainly prompted by the issues associated with the Internet and its global presence and acceptance. New ethical dilemmas in the age of developed information technology brought us issues such as digital piracy³³, cyber espionage³⁴, online identity theft³⁵, Internet addiction³⁶, and online bullying³⁷. As observed by (Luppigini, 2013), our purpose in this area has to evolve the technological relationships of humans with a focus on ethical implications for human life, social norms and values, education, work, politics, law, and ecological impacts.

In his paper on information ethics in the twenty first century, Sturges (2009) proposes that “twenty first century information science is becoming ethical information science”. However, he adds that “information ethics is not the exclusive possession of the discipline of information science”. The discussion of information ethics has grown out of the discussion on the ethics of librarianship and library professionals. However, the media and press ethics, computer and Internet ethics, and also the ethics of governance and businesses concern themselves with the same issues as the ethics of librarianship. Although somewhat different in some domains, the growth of the Internet and online access raises new ethical issues such as intellectual freedom, privacy and secrecy, information security, and concerns about social justice.

In the library and information world, the first formal code of ethics was the American Library Association's (ALA) "*Code of Ethics for Librarians*" from 1938 (Vaagan, 2002). The current ALA Code of Ethics³⁸ covers eight particular situations:

1. Highest level of service to all library users
2. Intellectual freedom without censorship
3. Library user's right to privacy and confidentiality
4. Respect intellectual property rights
5. Respect and fairness to co-workers
6. Do not advance private interests at the expense of library users
7. Distinguish between personal convictions and professional duties
8. Excellence in the profession

³³ Digital piracy is defined as the illegal copying/downloading of copyrighted software and media files (Al-Rafee and Cronan, 2006).

³⁴ Cyber espionage is an expansion of traditional efforts to collect information on an opponent's intentions and military capabilities (Lewis, 2010).

³⁵ Online identity theft occurs when a party acquires, transfers, possesses, or uses personal information of a natural or legal person in an unauthorized manner, with the intent to commit, or in connection with, perform fraud or other crimes (OECD, 2009).

³⁶ Internet addiction has been identified as a legitimate psychological disorder with significant implications for an individual's cognitive, emotional, and social development (Price, 2011).

³⁷ Aggression using ICT is referred to as cyberbullying (also called electronic bullying or online bullying) when it is identified as intentional and repeated aggression. More specifically, cyberbullying is defined as hurtful and intended communication activity (Erdur-Baker, 2010).

³⁸ <http://www.ala.org/advocacy/proethics/codeofethics/codeethics>

The International Federation of Library Associations and Institutions (IFLA) is the leading international body representing the interests of library and information services and their users. It is regarded as the main global voice of the library and information profession, and has developed a very elaborate “*Code of Ethics for Librarians and other Information Workers*”³⁹. It was developed in the belief that librarianship is, in its very essence, an ethical activity embodying a value-rich approach to professional work with information. The IFLA Code of Ethics proposes the following six clauses:

1. Provide access to information for all
2. Responsibilities towards individuals and society
3. Respect privacy, secrecy and transparency
4. Promote open access while respecting intellectual property
5. Commitment to neutrality, personal integrity and professional skills
6. Treat colleagues with fairness and respect

If there is a single set of ethical principles that I tried to follow during employment with various United Nations organizations, it is most likely this IFLA set. It covers the most important ethical concerns from the perspective of the information professional, as well as the guidelines for anyone working in an international environment with noble goals such as the United Nations.

The United Nations has also issued its own set of ethical guidelines, called the “*Standards of Conduct for the International Civil Service*”⁴⁰. It should be noted that in addition to the UN-wide guidelines, each of the United Nations specialized agencies has its own detailed instructions regarding ethics and the ethical conduct of its own staff.

The values that are enshrined in the United Nations organizations and that guide the actions of international civil servants are: fundamental human rights, social justice, the dignity and worth of each person and respect for the equal rights of men and women and of nations great and small. Besides these generally accepted principles, there are also some guidelines directly related to dealing with information. They include:

1. Confidentiality of disclosed information
2. Use and protection of information
3. Relations with the member states, the general public, and the media
4. Independence and impartiality

Often professionals talk of codes as though they are the basis of their discipline or their activities. However, very few professions, namely doctors, lawyers and accountants are

³⁹ <http://goo.gl/nBosck>

⁴⁰ <http://icsc.un.org/resources/pdfs/general/standardsE.pdf>

operating in a system based on their code of ethics. The code in almost all other cases is aspirational, inspirational and a basis for ethical reflection. As short statements of principle, codes can seldom provide everything that is needed to cope with the moral ambiguities that are the stuff of professional life (Sturges, 2009). It is the case with many disciplines, including information management, and with many professionals, including information management. It is also the case with my professional work which involved different environments, organizations, projects, teams, goals and objectives.

B. Ethical issues in selected public works

One ethical issue that occurred during my work at the Yugoslav Federal Institute for Scientific, Educational, Cultural and Technical Cooperation in Belgrade addressed some of these concerns, in particular access to information and balanced collection development. At that time, the problem seemed to be one of comprehensiveness of the collection but it was fundamentally based on access and balance. For me, the practical problem was not inclusion or identification all of the agreements; but rather a question of having certain aspects of a particular technical cooperation included in other political agreements which were regarded as confidential and out of the collection's scope. It is an issue of information comprehensiveness and reliability verses confidentiality of disclosed information. This particular situation was resolved by including all publicly available open access documents, while leaving some special restricted agreements outside the published set. The decision was based on the belief that this would speed up the publishing, increase the number of potential users and allow easier international cooperation of our universities, and cultural and technical cooperation among institutions with relevant foreign partners. At the same time, diplomatic and consular representatives were given an excellent open reference tool for their daily work. It was made clear in the introduction of both monographs that for the above reasons the collection included all publicly available agreements approved by the National Assembly.

Work in Sierra Leone had its own special share of ethical concerns, mainly regarding the sensitivity and confidentiality of information available in the Documentation Centre. There were many reports on development projects, finance, budgeting, donor support, money spent, and results achieved (or missed), which could have proven embarrassing for the host country if made public, to say the least. Therefore, a special part of the collection was restricted to the public, and access was only allowed upon approval by the Ministry's Director of Development. There were also some problems with work discipline, patrons trying to remove some of the documents from the Documentation Centre, fair use of available material resources (e.g. supplies, stationary, gasoline), and other ethical issues characteristic of a very poor developing country. In these situations I adhered to ethical guidelines of the United Nations which mandate that we, the international civil servants,

are responsible for the appropriate use and stewardship of the United Nations property and assets, and that we are expected to make the best possible use of UN resources when conducting official business. The UN brochure on “Putting Ethics to Work” (2012) reminds us to always remember that as UN staff members, we are guests in the country that hosts us. In spite of some restrictions, researchers and students benefited the most from access to an organized collection of economic planning and national development related documents.

During my 20 years of employment with the ICAO, I encountered a number of situations when important ethical decisions had to be made. Over such a long time, almost all of the scenarios mentioned in the IFLA Code were included. However, my main ethical concern was duty of “providing access to information for all”. Some of the ICAO projects I was working on were related primarily to commercial aspects, such as income generation through the sale of publications. This contradicted the nature of our international organization, one already supported by public funds. It was my belief that the publications should be made freely available to the public. This led to some discussions with other members of the staff who did not share the same stance. I was a strong proponent for making the Chicago Convention on International Civil Aviation and some other related international legal instruments freely available to everyone over the Internet. At the same time, in my opinion, there was no conflict between me promoting open access and respecting the intellectual property, an argument often used to defend the policy of saleable publications. I did succeed in making the Chicago Convention publically accessible, but Annexes to the Convention remained part of the eShop.

Moving to the IAEA, the opening of the INIS collection to the general public had its share of ethical dilemmas. The biggest and most challenging was related to the respect of intellectual property, and copyright in particular. This was particularly evident with the appearance of so called “predatory publishers”. These are publishers involved with an exploitative publishing business model that demand removal from of publications from our collection, particularly PhD theses, claiming that we are violating their publisher’s rights and the rights of the authors. Most of the times these are bogus claims based on an exchange of emails with authors promising considerable income if the publishers manage their theses. Due to potential legal issues, I reluctantly recommended that we grant their requests, but this problem taught me to negotiate and reflect on the challenges of implementing open access information in a world still hampered by restrictions to the circulation of research beneficial to the public.

Another INIS related ethics issue came from a number of large publishing houses who wanted to include our collection in their huge databases and collections “free of charge”. In other words, with no cost to us but with a direct benefit of giving us exposure. They even claim that they do not charge their clients for the additional database. This is, in part,

true; however, although they were not charging for adding the INIS database to their collection, they were charging their clients a general subscription/access fee, which went against the main INIS principle of being an open source of nuclear information.

My work at UNESCO, ICAO and the IAEA involved opening the collections, making them transparent, and therefore reaching a satisfactory level of democratisation. I believe that I successfully achieved these tasks in all of these organizations and that I resolved the initial resistance to the benefit of both information providers and information users. Still, this action was fraught with ethical concerns which I confronted using as a guideline all four of the above mentioned principles related to information embedded in the *“Standards of Conduct for the International Civil Service”* as well as my own ethical compass and coherence.

C. Summary

The above mentioned ethical concerns have been related to my conduct as a member of a specific international organization which had a stringent code of conduct to follow in order to build a harmonious work environment. I have met the challenge of working in multicultural and very diverse establishments by following rigorously Standards of Conduct for the International Civil Service and by solving ethical issues that emerged in the light of it. My experience with employment on three different continents and many different countries attests to this. In particular, work at the Yugoslav Institute required the resolution of some ethical dilemmas regarding information completeness and availability; work in Sierra Leone required the utmost respect for cultural diversity; and work at ICAO and the IAEA challenged the provision of open access while respecting intellectual property, as well as respecting various political and economic interests.

The ethical dimension has been intrinsic to my public works whether I expanded public access to information (e.g. opening of INIS, placing ICAO on the web); whether it required responsible and respectful stance towards different cultures (e.g. work within the United Nations with colleagues and patrons from around the world); the respect privacy, confidentiality, and transparency (e.g. development plans and projects in Sierra Leone, nuclear information in INIS); to promote open access while respecting intellectual property (e.g. ICAO copyright and INIS 500,000 full texts); a commitment to neutrality, personal integrity and professional skills (e.g. achieved and awarded work results, see Appendix 5); and last but not least, treat colleagues with fairness and respect (e.g. successful manager of multinational projects and teams).

5. Conclusions

This busy world in which we live and work does not allow us much time to look back and to reflect on the things we have done, to think about why we did something the way we did, and to critically evaluate the outcomes of our previous endeavours by identifying the success and effectiveness. Critically reviewing life-long work accomplishments is an extremely amazing and interesting endeavour, but it should not be a goal in and of itself. It should always be viewed as a chance to draw upon some lessons and reflect on what was learned and what still needs to be learned and improved. Writing about one's own life and work is an enlightening experience and I am grateful that I had the chance to do this as part of my studies at the Middlesex University DProf programme.

At the beginning of this Context Statement, I had in mind three objectives: to make an inventory of my personal work achievements throughout my career; to define the main circumstances, influences, theories, concepts, and people, that have made the greatest impact on my career; and to evaluate the work performed and the results achieved. I believe I have accomplished all three objectives in this context statement.

As Confucius said many centuries ago – *You cannot open a book without learning something!* This book of reflection on my public works was a great opportunity to learn a lot about myself and about the information management area in which I have worked for over thirty years. We all learn by aggregating certain things or events into concepts and broader entities. With me, it happened while trying to identify the most relevant works in my professional career demonstrating many successfully completed tasks, assignments, projects, and publications. It was an eye-opener to revisit them and attempt to find a higher order and meaning, beyond the normal routine of daily tasks.

Four chronological sets of public works were selected as examples of my creativity and innovation in the area of information management. They included two monographs published by the Yugoslav Federal Institute for Scientific, Educational, Cultural and Technical Cooperation (1982-1983); work on the UNDP/UNESCO project – the establishment of the Development Documentation Centre in the Ministry of National Development and Economic Planning, Sierra Leone (1985-1988); a set of four different information products and services designed, developed and implemented by the International Civil Aviation Organization (ICAO) (1988-2008); as well as accomplishments on the International Nuclear Information System (INIS), modernizing it and making it an open source for all Internet users (2008-2014).

The list of works I selected clearly demonstrates the progress made from the use of printed materials to the more sophisticated use of digital and electronic publications, such as CD-ROMs and websites - ranging from controlled and restricted websites to those commercially open and publically free. The professional tools used at the time are

commonly known and available today, but at that time they were not generally accepted and used for those specific purposes. For example, the Development Documentation Centre in Sierra Leone was the only centre of its kind in the West African nation of Sierra Leone; CD-ROMs were the first of their kind created by ICAO; and the ICAO public website was the first website created within the entire United Nations system.

When looking back at the main trigger for my creative actions, I realize that there was no single factor which could be regarded as the main influencer. Rather, there was a spectrum of circumstances and factors which included my sensitivity to and respect for user needs; a hands-on management style; continued education and self-improvement; and first-hand exposure to various professional conferences, meetings, presentations and publications.

From a thematic point of view, the evaluation of my work emphasised three themes as a silver lining in my public works. The major themes, as elaborated here, are: the constant adaptation of frequent and continuing change, characteristic to information and knowledge management; the tendency to improve, open and democratise access to information; and the global impact of information.

The main lesson for me here seems to be the realization that the only constant in our lives and our work is change. People change, work procedures change, and customer demands and expectations change. What was yesterday a perfect solution, product or service, is today just a historical artefact. If we do not instigate constant innovation and modernization in our areas of work, specifically in the area of information management, we will become museum custodians, instead of leaders in today's knowledge economy and the world of information in which we live.

Regarding my contribution to knowledge in the area of information management, I think it lies implicitly in the significance of my work results in that area, and in the fact that I have been pushing the boundaries of practice, while using every possible opportunity, such as presentations at various conferences and extensive publishing, to further promote it.

It is my hope that the public works presented in this Context Statement will contribute to an understanding of the problems and practicalities involved in implementing creative and innovative solutions in the area of information management. Successful creativity and innovation *in information management* requires people with new skills; it needs new and more open environments; it requires substantial organizational change, perhaps in the form of matrix management. Furthermore, it demands quicker adoption of new technologies; and the introduction of new information solutions. This is an area worth further research and study.

Appendix 1: Evidence of Public Works

A set of two monographs published by the Yugoslav Federal Institute for Scientific, Educational, Cultural and Technical Cooperation (1982-1983)

- Savic, D. (1982) (ed.) *Yugoslav International Agreements on Scientific, Educational, Cultural and Technical Cooperation: Bilateral Cooperation*. Beograd: YUZAMS
www.vbs.rs/scripts/cobiss?ukaz=DISP&id=1414598120611262&rec=3&sid=1
- Savic, D. (1983) (ed.) *Yugoslav International Agreements on Scientific, Educational, Cultural and Technical Cooperation: Multilateral Cooperation*. Beograd: YUZAMS
www.vbs.rs/scripts/cobiss?ukaz=DISP&id=1414598120611262&rec=2&sid=1

UNDP/UNESCO project: The Establishment of the Development Documentation Centre in the Ministry of National Development and Economic Planning, Sierra Leone (1985-1988)

- UNESCO (1992) *Establishment of Development Documentation Centre: Sierra Leone: Project findings and recommendations (Mission Report)*. UNESCO/UNDP. Paris, France: UNESCO/UNDP. 35p.
goo.gl/4jRYH4
- Savic, D. (1991) *The Role of a Documentation Centre in Development Planning: A Case Study of the Development Documentation Centre in Sierra Leone*. Ann Arbor, Michigan: UMI (MPhil theses, Loughborough University of Technology, United Kingdom).
- Savic, D. (1991) *Information and Documentation Services as a Tool for Improving National Development Planning: A Case Study of Sierra Leone*. *International Library Review*, 23, 215-227.
- Savic, D. (1999) *Former United Nations Volunteer in Sierra Leone*. *World Volunteer Web*, 13/12/1999. www.worldvolunteerweb.org/news-views/volunteer-stories/doc/former-united-nations-volunteer.html
- *Effects of the Civil War and the Role of Librarians in Post-War Reconstruction in Sierra Leone*. *World Libraries* (Kargbo, 2002) www.worlib.org/vol12no2/kargbo_v12n2.shtml
- UNESCO Archives www.unesco.org

A set of four different information products and services designed, developed and implemented by the International Civil Aviation Organization (ICAO) (1988-2008)

- ICAO home page, ICAO-NET and ICAO eSHOP. Please see p. 33-34, or go to:
https://web.archive.org/web/*/http://www.icao.int
https://web.archive.org/web/*/http://www.icao.int/icaonet
https://web.archive.org/web/*/http://www.icao.int/eshop
- *ICAO on the Internet. International Conference on Civil Aviation and the Internet* (Savic, 2001) dobrica.savic.ca/pubs/moscow.pdf
- *Developing a Web Catalogue for a Small Library. Computers in Libraries Conference, 9-12 March 1997, Washington, D.C.* (Savic, 1997).
- *ICAO Library on the Internet - Building a Web Catalogue. FAO Virtual Library Forum, 18-19 April 1996, Rome* (Savic, 1996).
- *United Nations Virtual Library - Some Conceptual and Developmental Issues. FAO Virtual Library Forum, 18-19 April 1996, Rome* (Savic, 1996).
- *ICAO Automated Records Management System (ARMS). World Bank Electronic Document Management (EDMS) Workshop, 1 November 1993, Washington, D.C.* (Savic, 1993).
- *ICAO Certificate of Merit, 21 January 2002; Congratulation Letter on Completion of ICAO's First CD-ROM, 19 February 1998; Merit Increment, ICAO 7 August 1995; ICAO 50 Anniversary Pin for Dedication and Contribution, 7 December 1994; Merit Increment, ICAO 19 November 1990* (See Appendix 4)

International Nuclear Information System (INIS) (2008-2014)

- International Nuclear Information System (INIS) <http://www.iaea.org/inis/>
- INIS Progress and Activity Reports (1996–2013) www.iaea.org/inis/about-us/activities/index.html
- Consultative Meetings of INIS Liaison Officers www.iaea.org/inis/events/index.html
- INIS Newsletters www.iaea.org/inis/products-services/newsletter/index.html
- INIS Highlights www.iaea.org/inis/highlights/index.html
- Using a Google Search Appliance (GSA) to search digital library collections: a case study of the INIS Collection Search (Savic, 2014). leo.cineca.it/index.php/ilis/article/view/10071.
- Nuclear Information Democratisation. Online Searcher. Volume 37. Number 6, November/December 2013, pp. 30-32, 49-51 (Savic, 2013)
www.infoday.com/OnlineSearcher/Articles/Features/Nuclear-Information-Democratization-93026.shtml
- The History of Digital Preservation at INIS (Savic, 2013) dobrica.savic.ca/pubs/inis-newsletter-14-digital-preservation.pdf
- INIS Web Analytics (Savic, 2012) dobrica.savic.ca/pubs/inis-newsletter-13-web-analytics.pdf
- The 35th Consultative Meeting of INIS Liaison Officers (Savic, 2011)
dobrica.savic.ca/pubs/inis-newsletter-11-ilom.pdf
- New INIS Collection Search Capability (Savic, 2011) dobrica.savic.ca/pubs/inis-newsletter-11-search.pdf
- The 13th INIS/ETDE Joint Technical Committee Meeting (Savic, 2011)
dobrica.savic.ca/pubs/inis-newsletter-11-etde.pdf
- Democratisation of Scientific and Technical Information (Savic, 2010)
dobrica.savic.ca/pubs/inis_newsletter_09.pdf
- INIS/ETDE Joint Technical Committee Meeting: Laying the Foundation for the Future (Savic, 2009)
dobrica.savic.ca/pubs/inis_newsletter_08_1.pdf
- INIS Looking to the Future (Savic, 2009) dobrica.savic.ca/pubs/inis_newsletter_08_2.pdf
- INIS and International Cooperation in Nuclear Information (Savic, 2009)
dobrica.savic.ca/pubs/inis_newsletter_07_article.pdf
- Information and Nuclear Newcomer States (Savic, 2008)
dobrica.savic.ca/pubs/inis_newsletter_06_article.pdf
- The Future of Nuclear Information. Conference on The Role of the International Nuclear Information System (INIS) in Supporting Nuclear Education and Industry (Savic, 2013)
dobrica.savic.ca/pubs/DSavic_FutureOfNuclearInformation_Moscow.pptx
- The Future of Libraries. United Nations Library and Information Network for Knowledge Sharing (UN-LINKS), 18 – 20 September 2013, Geneva (Savic, 2013)
dobrica.savic.ca/pubs/DSavic_2013_FutureOfLibraries.pptx
- Introducing a Google-type Search to a Digital Library. United Nations Library and Information Network for Knowledge Sharing (UN-LINKS), 18 – 20 September 2013, Geneva (Savic, 2013)
dobrica.savic.ca/pubs/DSavic_2013_Google_type_Search.pptx
- Future of Scientific and Technical Information: World Information Trends and Impact on the Nuclear Information Section (Savic, 2012) dobrica.savic.ca/pubs/DSavic_Future_of_%20STI.pptx
- Merit Award. International Atomic Energy Agency (IAEA), May 2013. Merit Award awarded by the International Atomic Energy Agency (IAEA) for outstanding performance (See Appendix 4)

Appendix 2: List of my Publications

Articles

- [Rapports de recherche: Points de vue](#). I2D Information, données et documents: Pratiques & Recherche, No. 1 Mars 2015, pp. 56-57
- Using a Google Search Appliance (GSA) to search digital library collections: a case study of the INIS Collection Search. Italian Journal of Library and Information Science (ISSN: 2038-1026). No. 2, Vol. 5 (2014).
- [Using Google Search Appliance to Search Digital Library Collections](#). Agricultural Information Management Standards. 20 March 2014. Available also [here](#).
- [IAEA General Conference and INIS](#). Nuclear Information and Knowledge (ISSN 2219-3634). No. 15, December 2013.
- [Interview with Head of NIS](#). Nuclear Information and Knowledge (ISSN 2219-3634). No. 15, December 2013.
- [Digital Preservation at International Nuclear Information System \(INIS\)](#). Dobrica Savic, Germain St-Pierre. Proceedings of the Fifteenth International Conference on Grey Literature: The Grey Audit: A Field Assessment of Grey Literature. 2-3 December 2013, Bratislava, Slovak Republic.
- [Nuclear Information Democratisation](#). Online Searcher. Volume 37. Number 6, November/December 2013, pp. 30-32, 49-51. Available also [here](#).
- [The History of Digital Preservation at INIS](#). INIS Newsletter No. 14, June 2013.
- [INIS Web Analytics](#). INIS Newsletter No. 13, September 2012.
- [Steve Jobs - Inspiration for Innovation and Quality](#). January 2012.
- [The 35th Consultative Meeting of INIS Liaison Officers](#). INIS Newsletter No. 11, June 2011.
- [New INIS Collection Search Capability](#). INIS Newsletter No. 11, June 2011.
- [The 13th INIS/ETDE Joint Technical Committee Meeting](#). INIS Newsletter No. 11, June 2011.
- [Democratisation of Scientific and Technical Information](#). INIS Newsletter No. 9, June 2010.
- [INIS/ETDE Joint Technical Committee Meeting: Laying the Foundation for the Future](#). INIS Newsletter No. 8, December 2009.
- [INIS Looking to the Future](#). INIS Newsletter No. 8, December 2009.
- [INIS and International Cooperation in Nuclear Information](#). INIS Newsletter No. 7, June 2009.
- [Information and Nuclear Newcomer States](#). INIS Newsletter No. 6, December 2008.
- [E-GOVERNANCE: Theoretical foundations and practical implications](#). Research project in Public Administration. Montreal, July 2006.
- [Democracy and Not-for-Profit Organizations](#). Research project in Not-for-Profit Managerial and Administrative Theory and Practice. Montreal, 1 March 2006.
- [Impact of Public Sector Outsourcing on Employee Work Attitudes](#). Organization Behaviour and Theory. Montreal, October 2005.
- [International Civil Aviation Organization \(ICAO\): Fundamentals of law for charitable and not-for-profit corporations](#). Montreal, July 2005.
- [United Nations Volunteers](#). UNV News #82, December 1998.
- [CUTT-x: An Expert System for Automatic Assignment of Cutter Numbers](#). Cataloguing & Classification Quarterly, 22 (2), July 1996, p. 71-87.
- [Automatic Classification of Office Documents: Review of Available Methods and Techniques](#). Records Management Quarterly - ARMA, October 1995, p. 3-18.
- [La bibliotheque de l'Organisation de l'aviation civile internationale](#). D.Savic et G. Giroux, L'Ecluse, juillet- septembre 1995, p. 25-28.

- [Les cinquante ans de la bibliotheque de l'Organization de l'aviation civile internationale](#). D.Savic et G. Giroux. Documentation et Biblioteques, juillet - septembre 1995, p. 161-168.
- [Designing an Expert System for Classification of Office Documents - A Case Study of CLOD-X](#). Records Management Quarterly - ARMA, July No. 3, 1994, p. 20-29.
- [Evolution of Information Resource Management](#). Journal of Librarianship and Information Science 24, (3) September 1992, p. 127-138.
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Appendix 5: List of Merit Certificates and other Awards

- IAEA Merit Award, May 2013
- ICAO Certificate of Merit, 21 January 2002
- Congratulation Letter on Completion of ICAO's First CD-ROM, 19 February 1998
- Merit Increment, ICAO 7 August 1995
- ICAO 50 Anniversary Pin for Dedication and Contribution, 7 December 1994
- Merit Increment, ICAO 19 November 1990






Certificate of Merit

The Secretary General
awards this certificate of merit to

Dobrica Savic

in recognition of the outstanding
performance during the past year.

21 January 2002
Date


Secretary General



INTERNATIONAL CIVIL AVIATION ORGANIZATION
ORGANISATION DE L'AVIATION CIVILE INTERNATIONALE
ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ГРАЖДАНСКОЙ АВИАЦИИ
منظمة الطيران المدني الدولي
国际民用航空组织

999 UNIVERSITY STREET, MONTREAL, QUEBEC, CANADA H3C 5H7

Tel.: (514) 954-8219
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Internet: icaohq@icao.org
Sitatex: YULCAYA

Telex: 05-24513
Cables: ICAO MONTREAL

19 February 1998

Dear Mr. Savic,

It gives me great pleasure to compliment you on the completion of ICAO's first CD-ROM: "Rules of the Air and Air Traffic Services".

Your leadership and valuable contribution to this pilot project with, of course, the involvement of several other staff members have been exemplary. I should like to congratulate you and those who assisted you on this successful achievement.

Yours sincerely,

Vivek Pattanayak
Director

Bureau of Administration and Services

INTERNATIONAL CIVIL
AVIATION ORGANIZATION

ORGANIZACION DE AVIACION
CIVIL INTERNACIONAL



ORGANISATION DE L'AVIATION
CIVILE INTERNATIONALE

МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ
ГРАЖДАНСКОЙ АВИАЦИИ

1000 SHERBROOKE STREET WEST, MONTREAL, QUEBEC, CANADA H3A 2R2
CABLES: ICAO MONTREAL TELEEX: 05-24513 FACSIMILE TEL: (514) 288-4772

OFFICE TEL

Ref: Personal and
Confidential Files

7 August 1995

Dear Mr. Savic,

I have pleasure in advising you that, under the provisions of Regulation 3.2.1, Article III of the Service Code, the Secretary General has granted you, with effect from 1 July 1995, one additional increment in consideration of the especially meritorious manner in which you have been discharging your duties. I should like to congratulate you on your outstanding performance during the previous year.

Yours sincerely,

Dirk Jan Goossen
Chief, Personnel Branch



INTERNATIONAL CIVIL AVIATION ORGANIZATION
ORGANISATION DE L'AVIATION CIVILE INTERNATIONALE
ORGANIZACIÓN DE AVIACIÓN CIVIL INTERNACIONAL
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TEL.: (514) 285-8041 FACSIMILE TEL.: (514) 288-4772 CABLES: ICAO MONTREAL TELEX: 05-24513

THE SECRETARY GENERAL

7 December 1994

Dear Mr. Savic,

It gives me great pleasure to present you with the ICAO 50th Anniversary pin which was especially designed for this memorable occasion. I should like to take this opportunity to express my sincere appreciation for your dedication and contribution to the successful completion of 50 years of ICAO's work on the development of international civil aviation which has taken great strides since the signing of the Chicago Convention on 7 December 1944.

I am honoured and pleased to celebrate the Organization's 50th Anniversary together with you by offering you this token of recognition.

Congratulations!

Yours sincerely,

Philippe Rochat

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19 NOV 1990

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Yours sincerely,

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Chief, Personnel Branch